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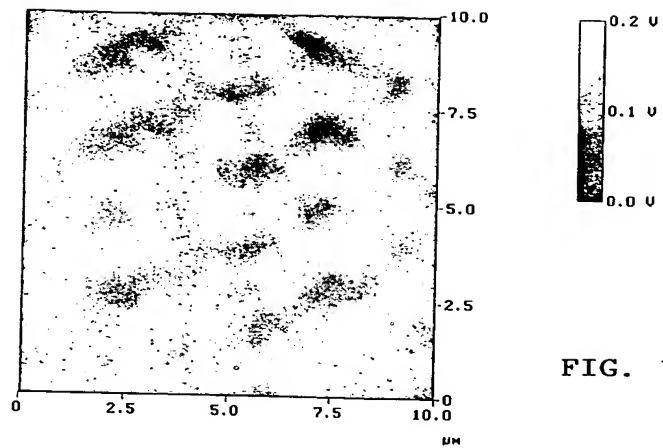


FIG. 1A

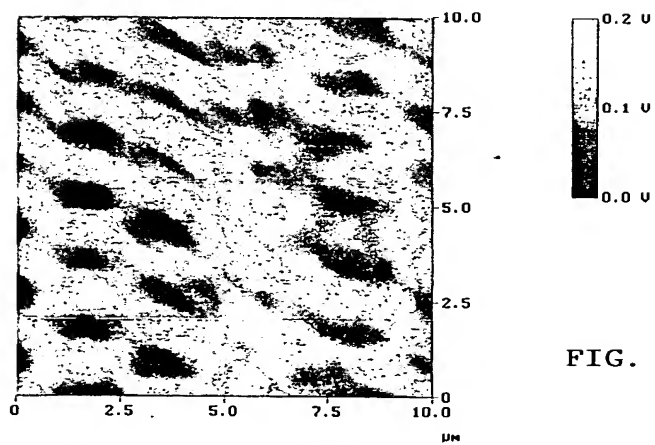


FIG. 1B

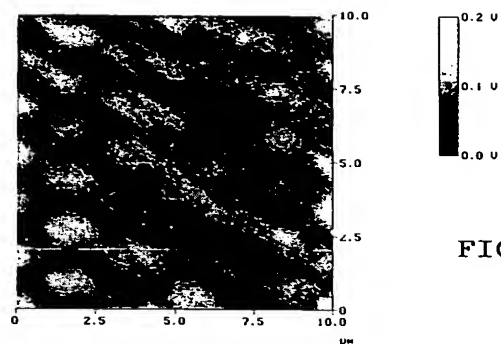


FIG. 2A

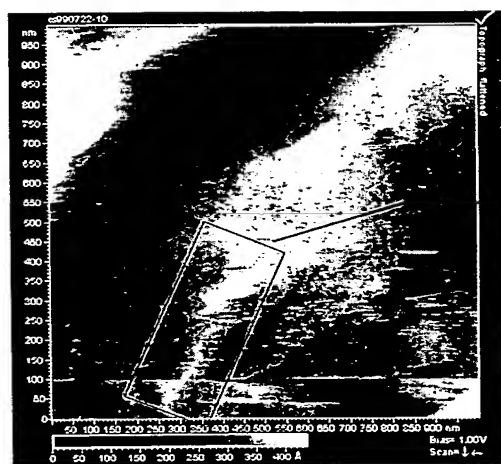


FIG. 2B

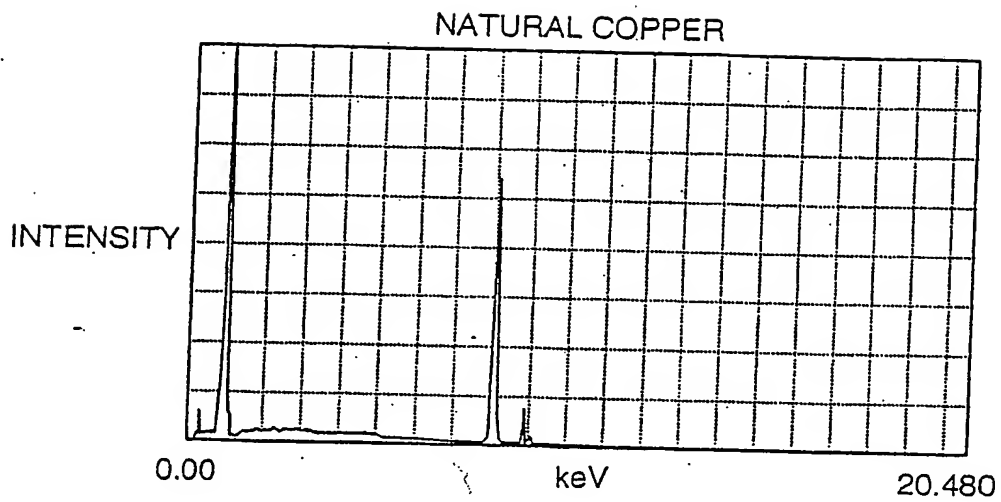


FIG. 3A

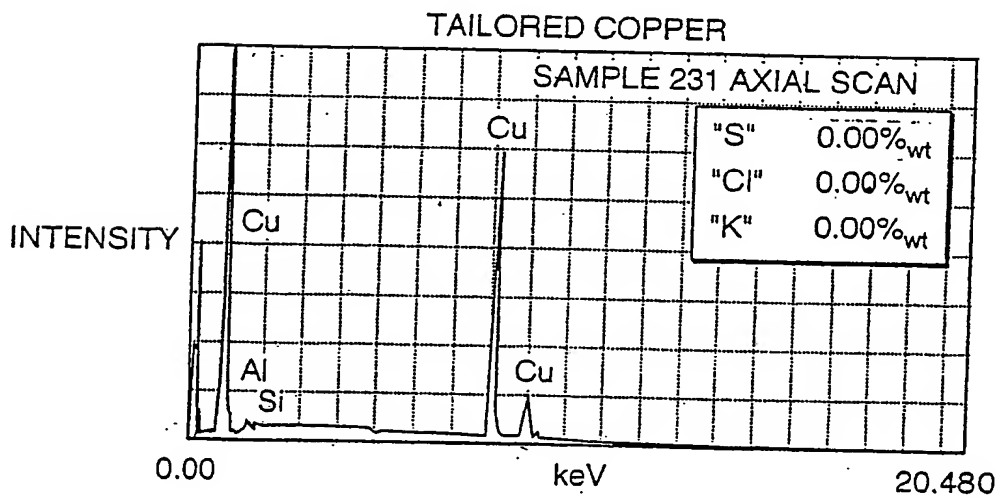


FIG. 3B

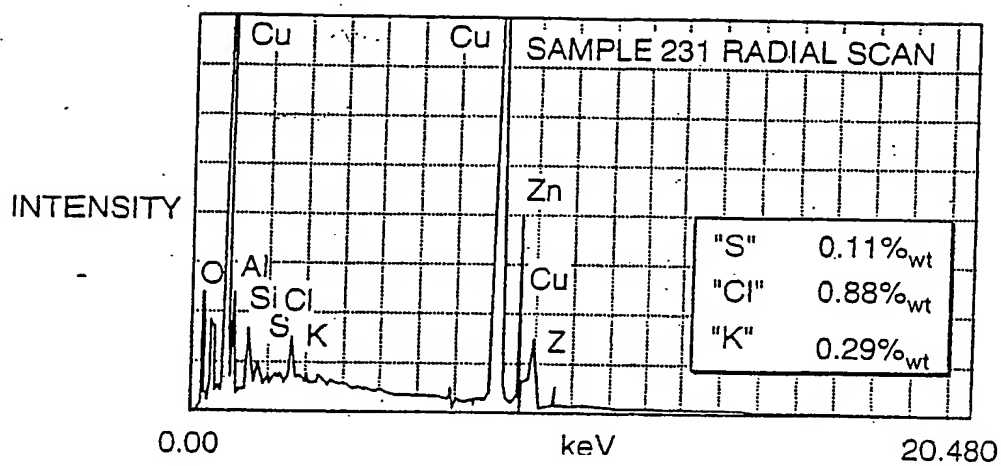


FIG. 4A

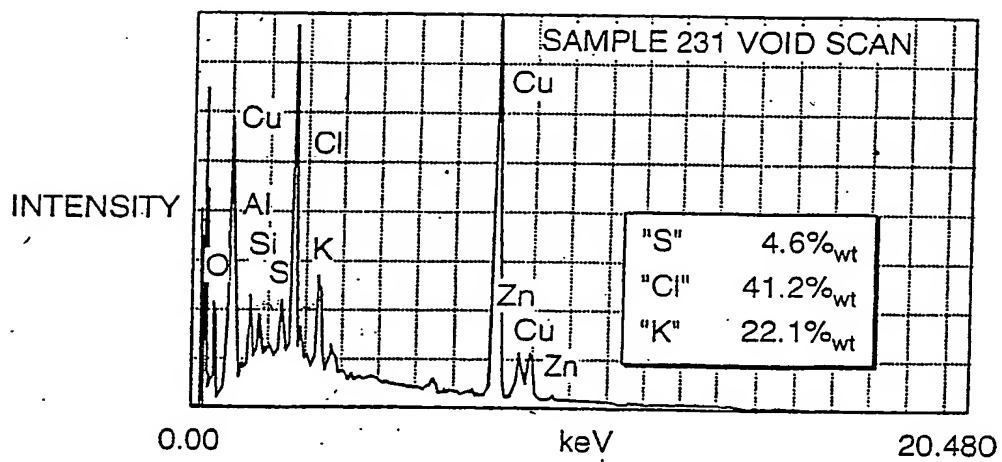
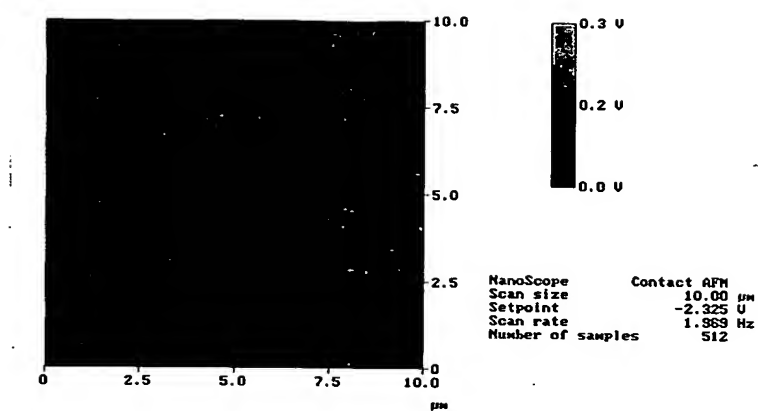


FIG. 4B



p1990722.037

MFM: Sample 231 Void Scan

FIG. 5A

TAILORED COPPER

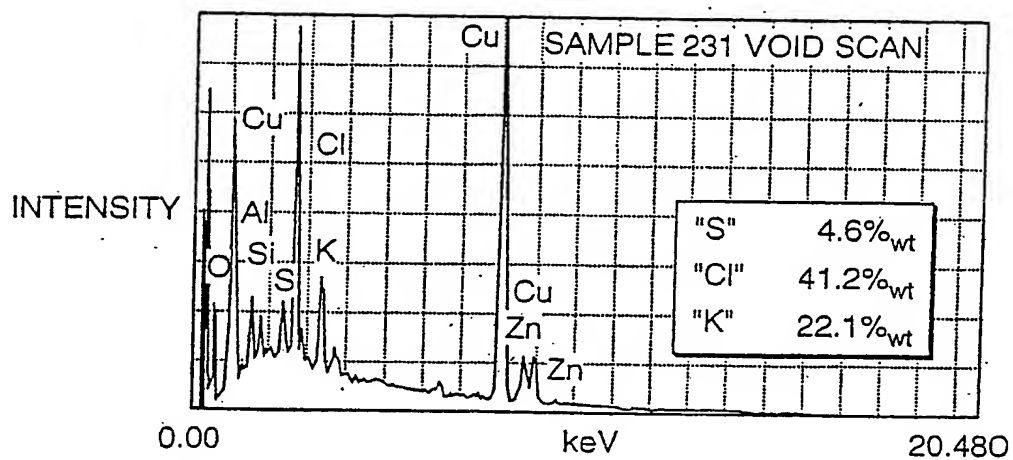


FIG. 5B

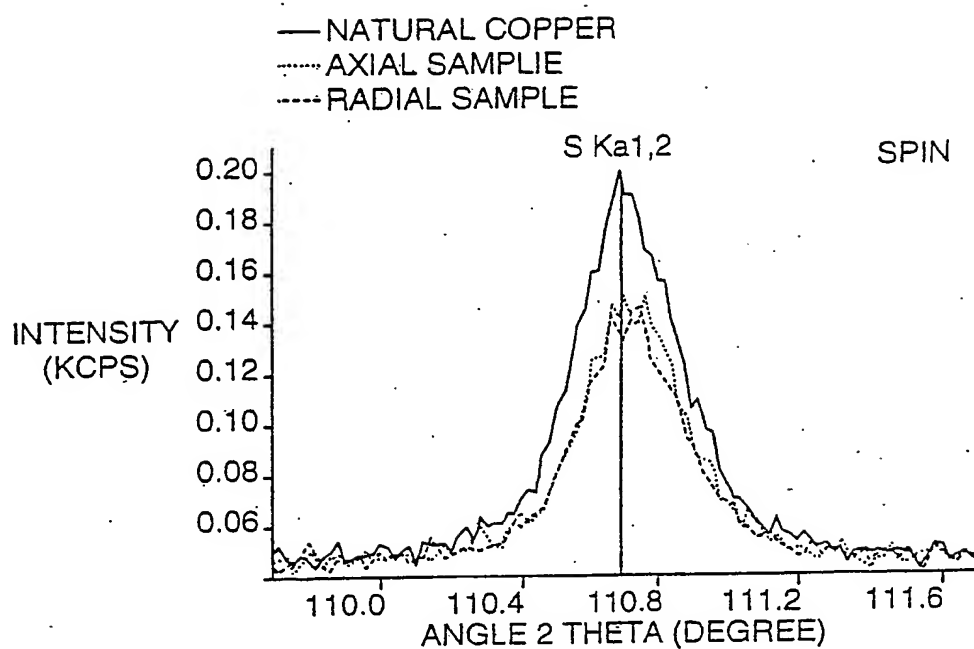


FIG. 6A

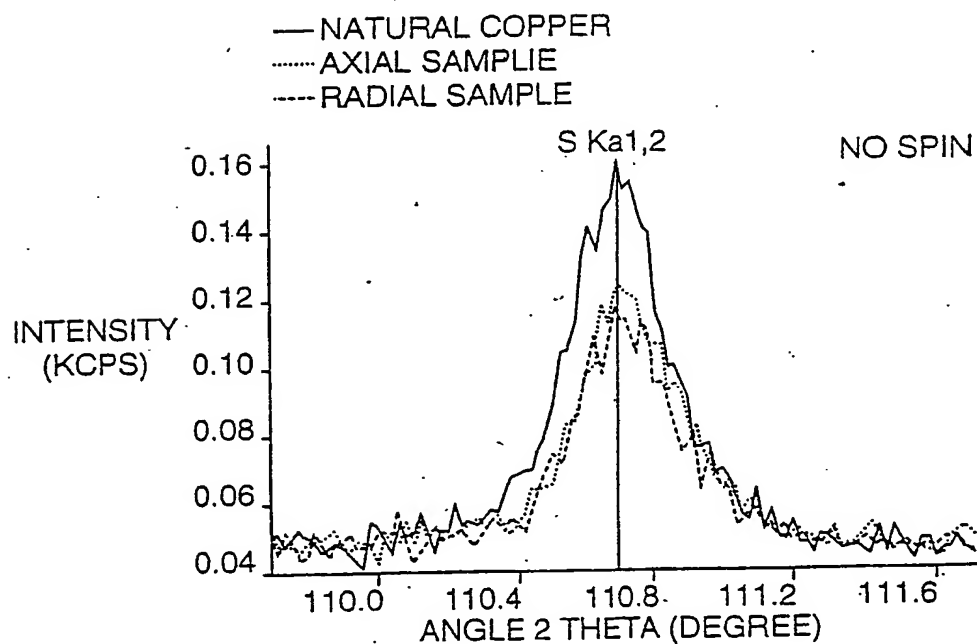


FIG. 6B

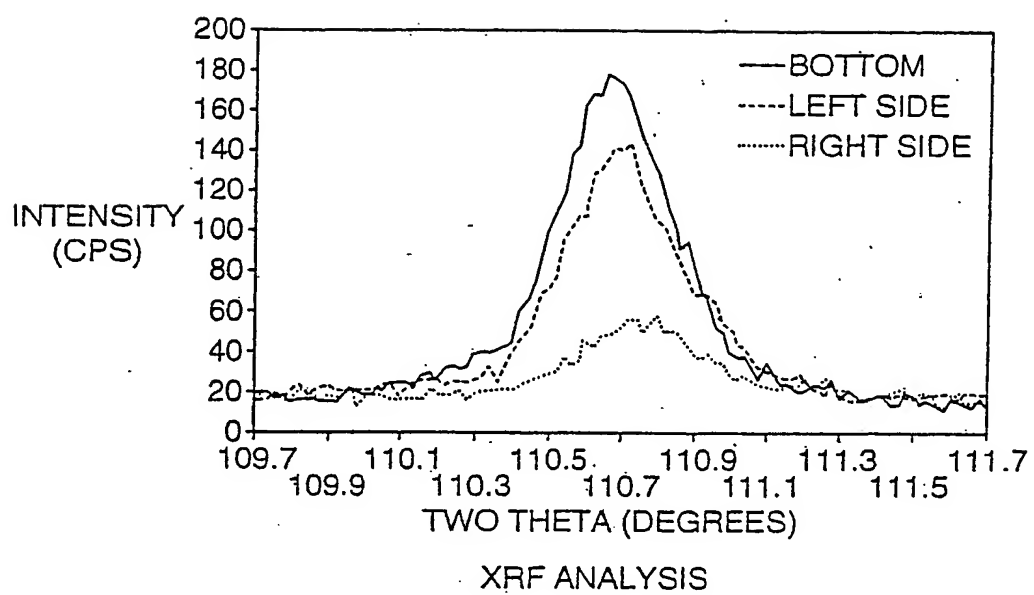


FIG. 7

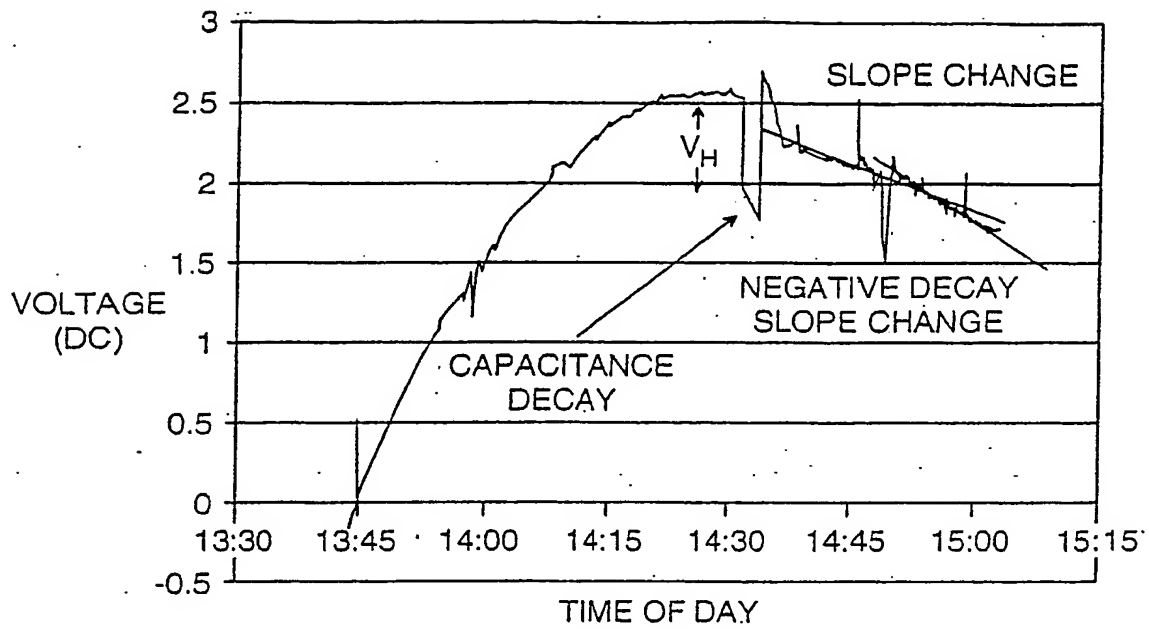


FIG. 8

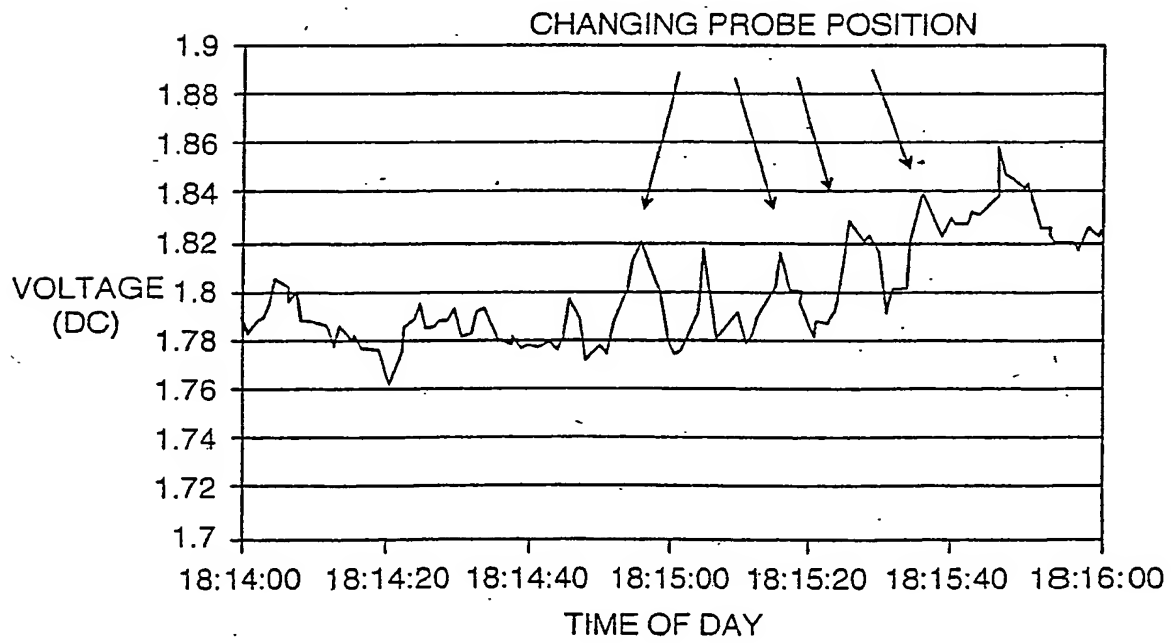


FIG. 9

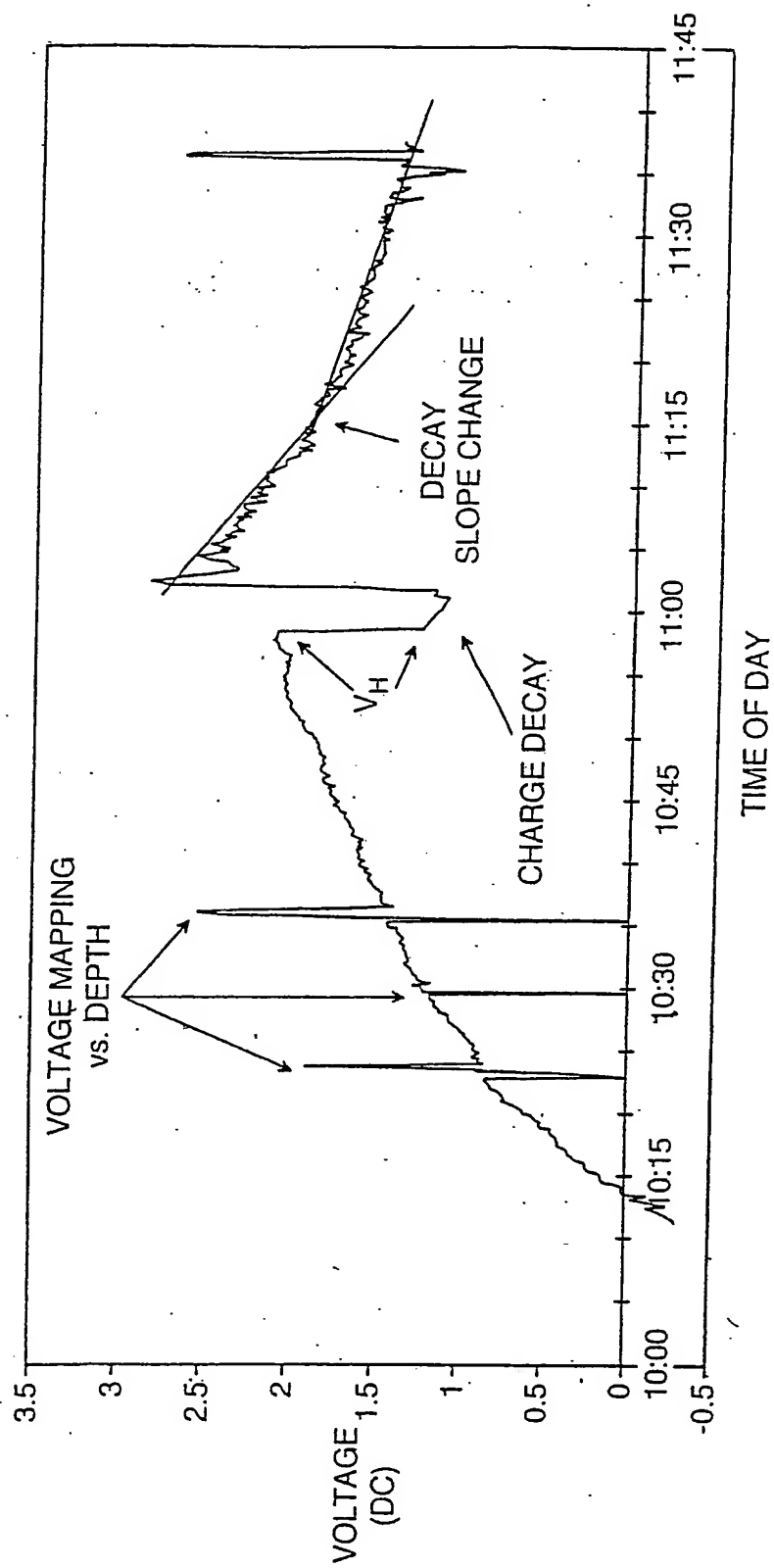


FIG. 10

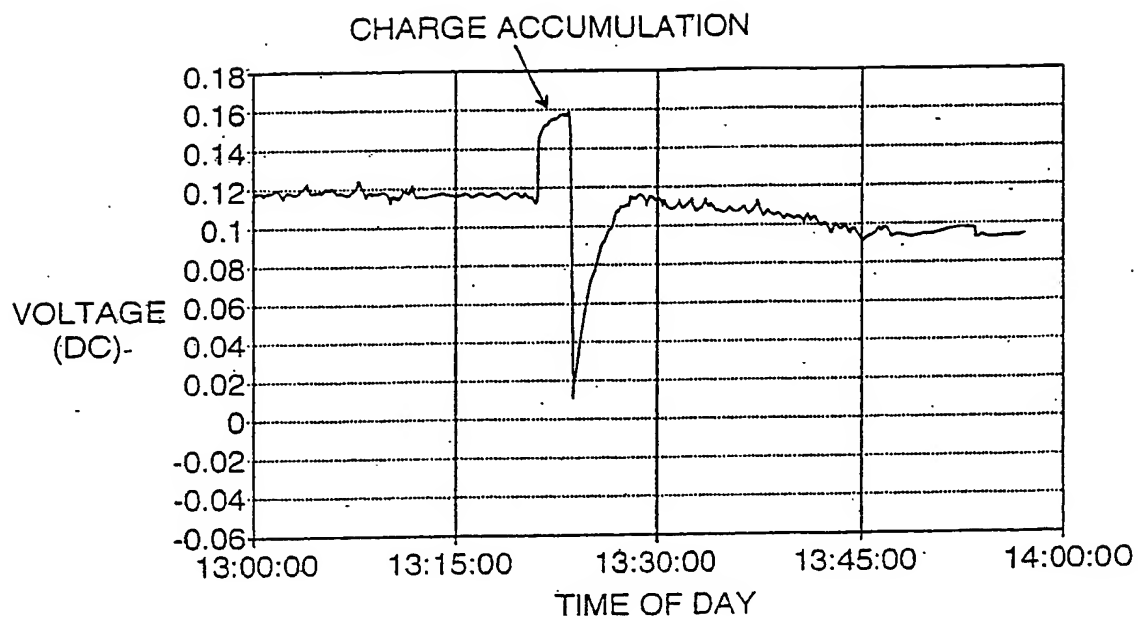


FIG. 11

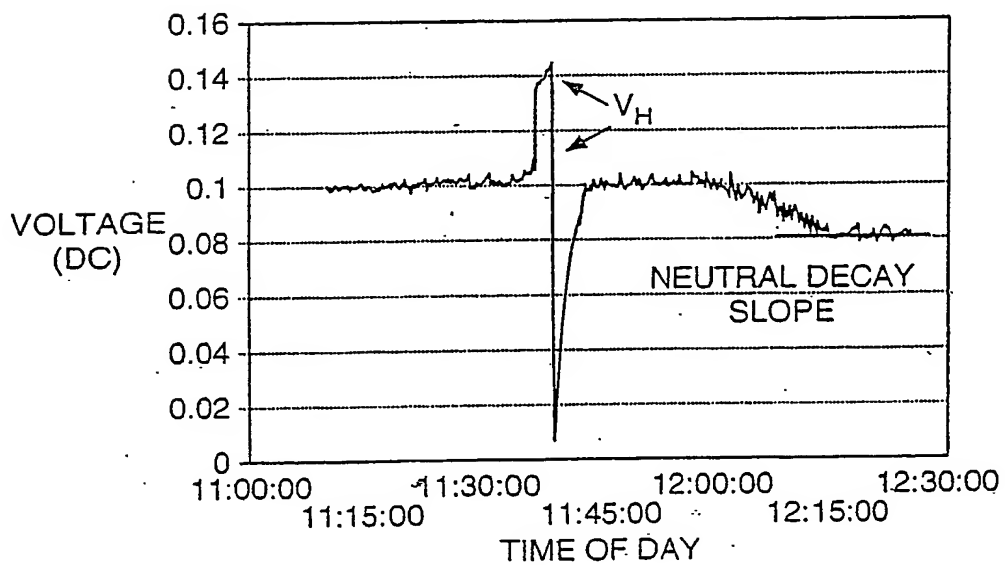


FIG. 12

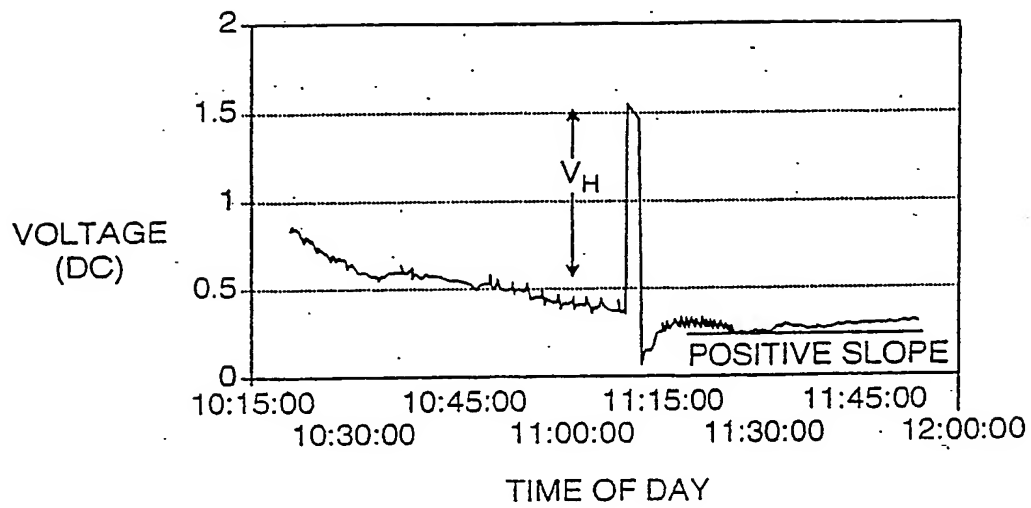


FIG. 13

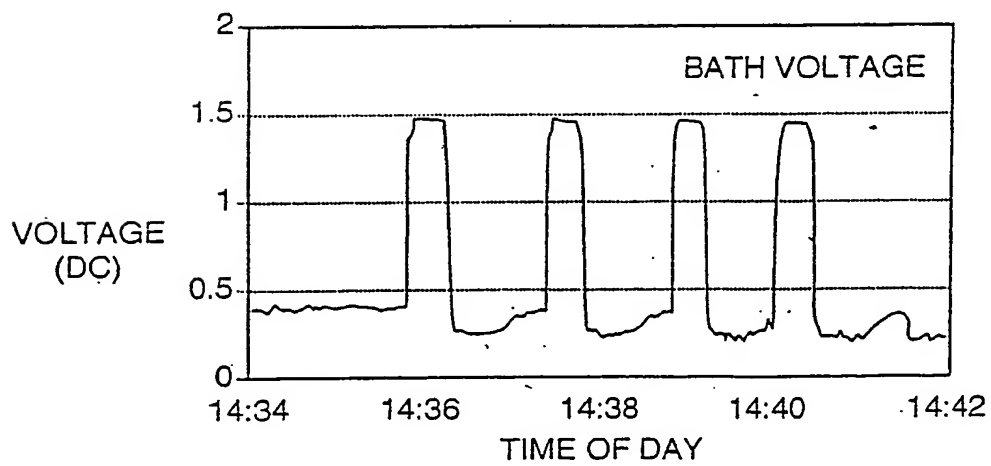


FIG. 14

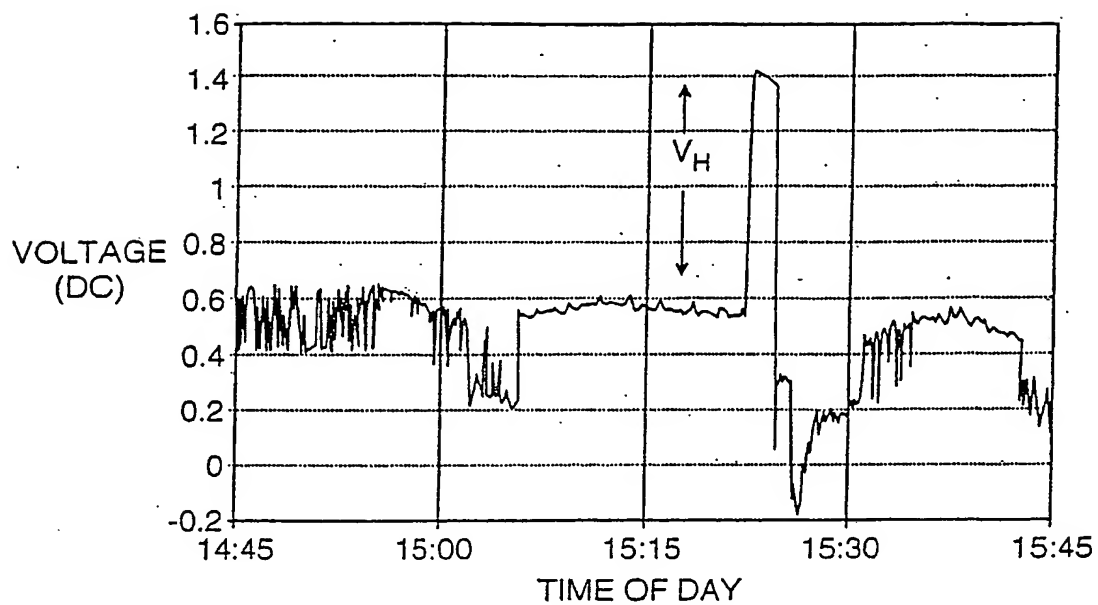


FIG. 15

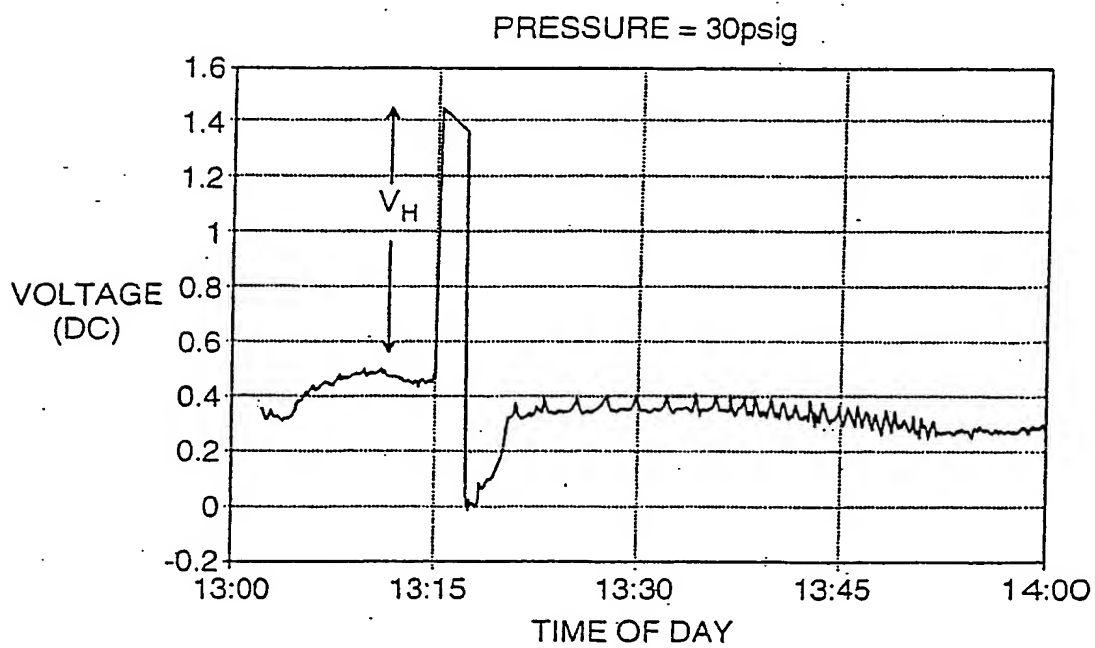


FIG. 16

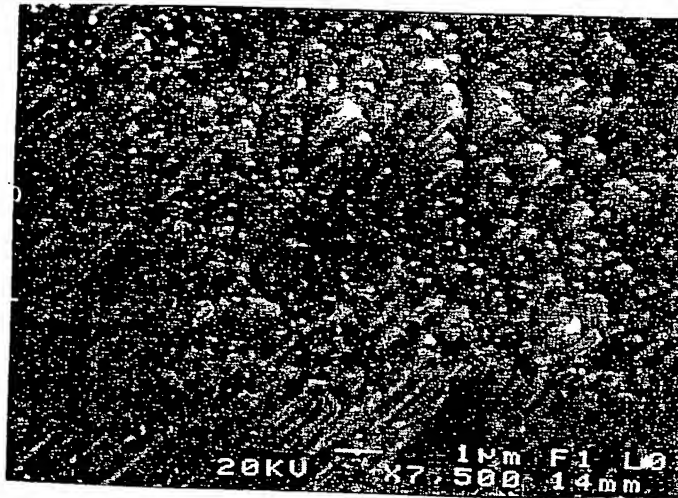


FIG. 17A

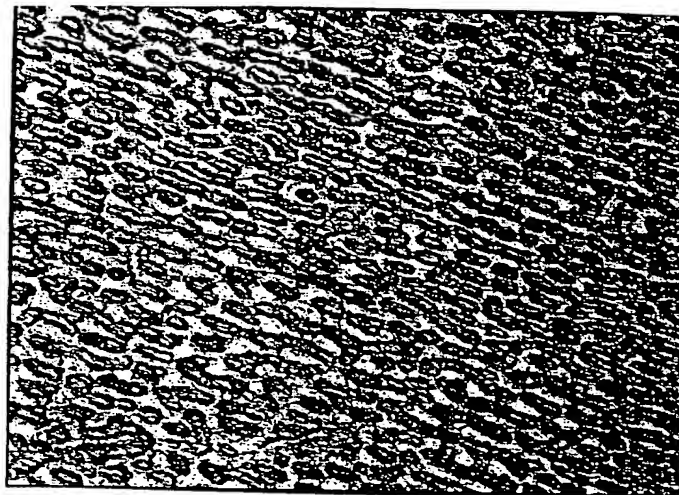


FIG. 17B

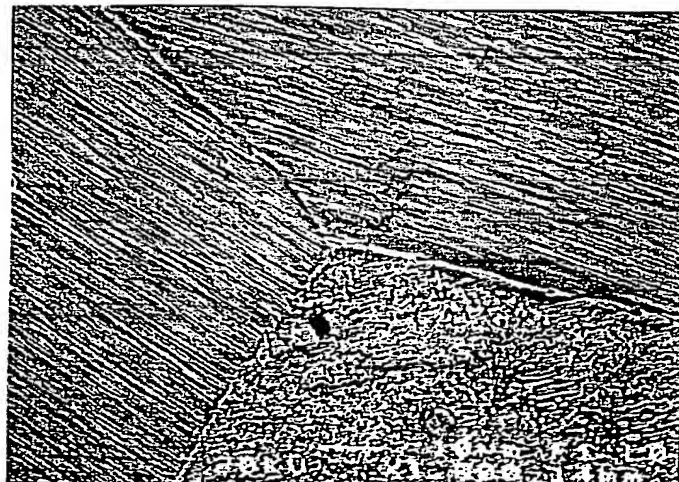


FIG. 17C

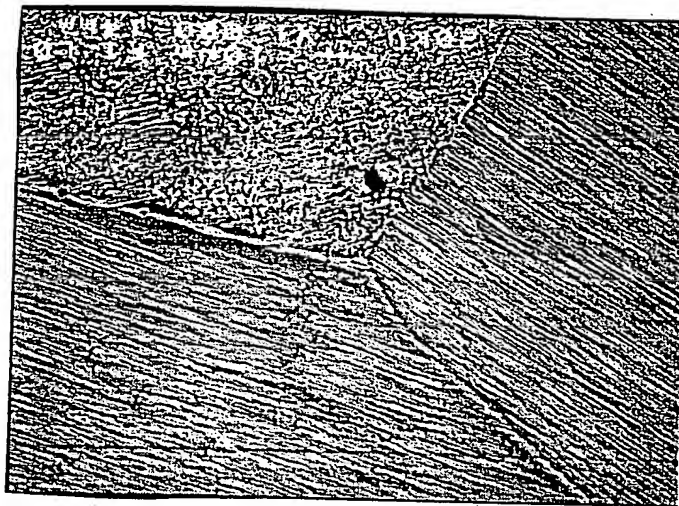


FIG. 18A

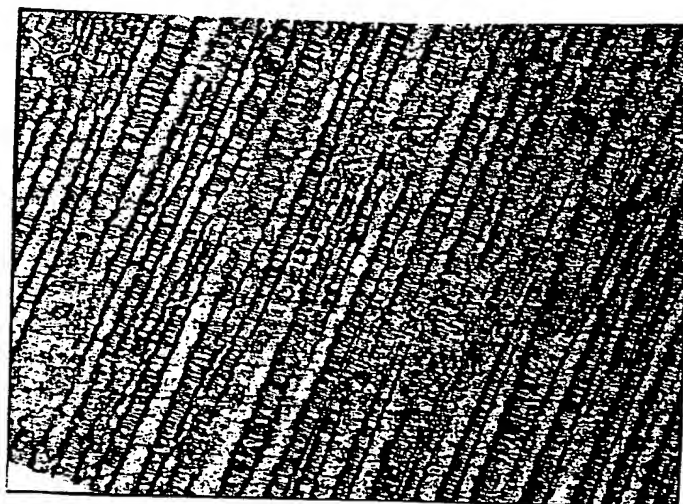


FIG. 18B

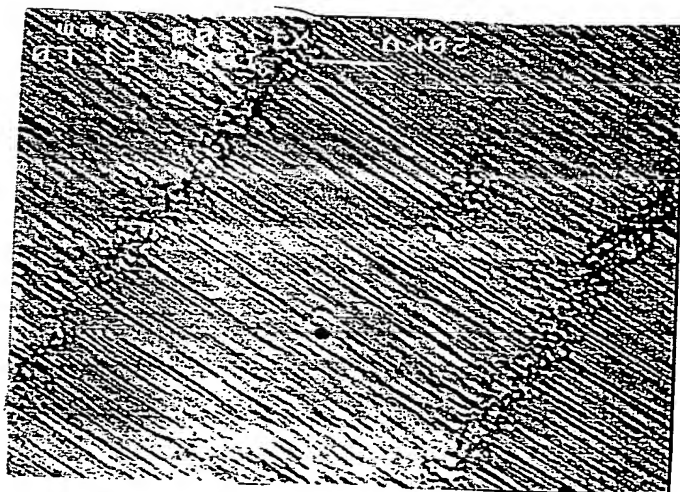


FIG. 18C

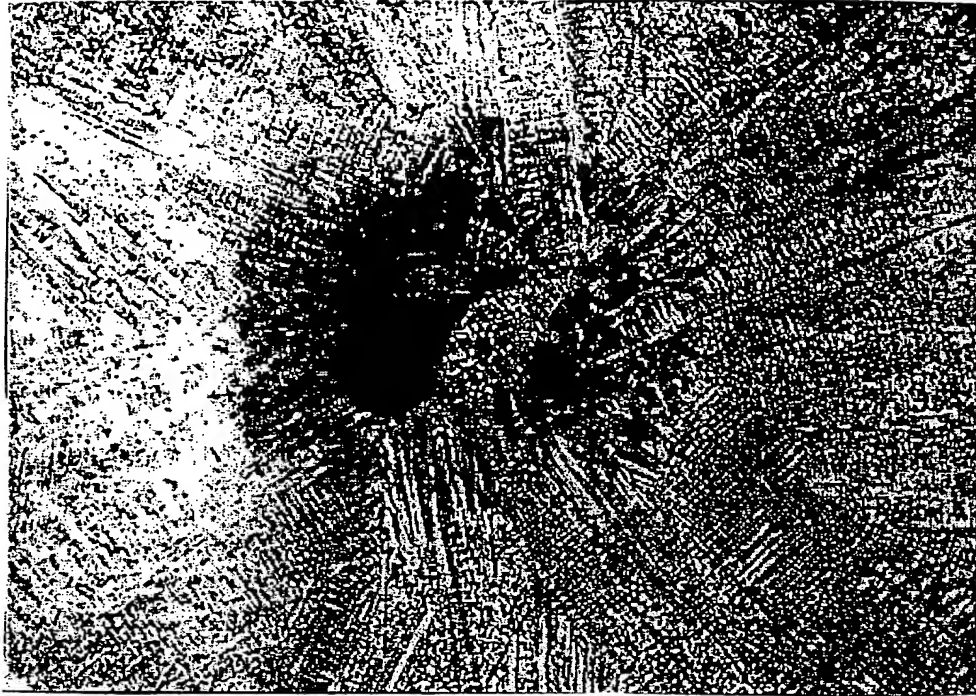


FIG. 19A



FIG. 19B

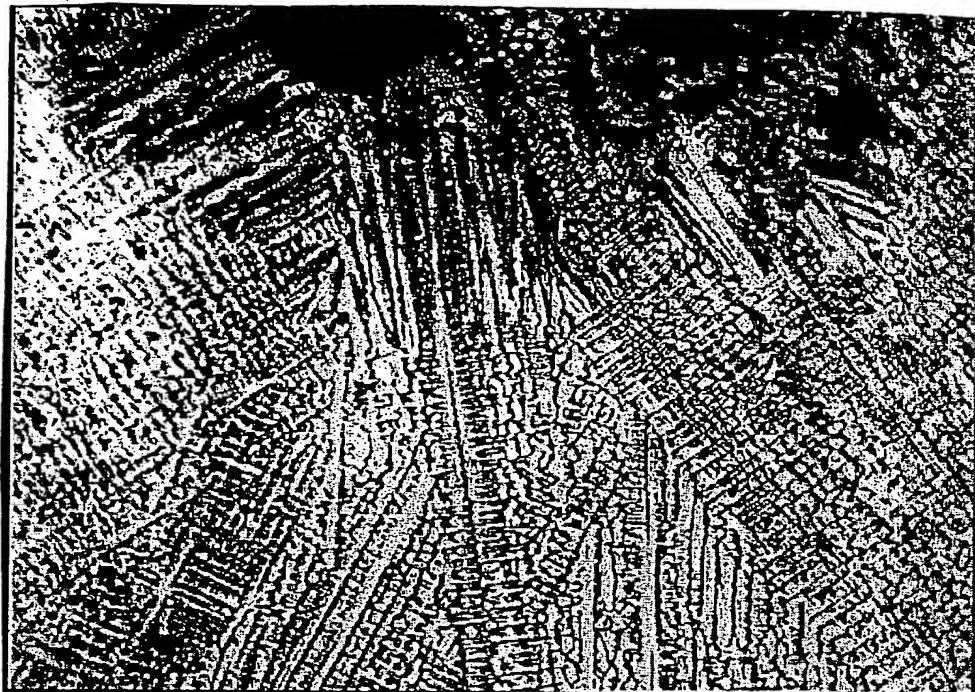


FIG. 20A

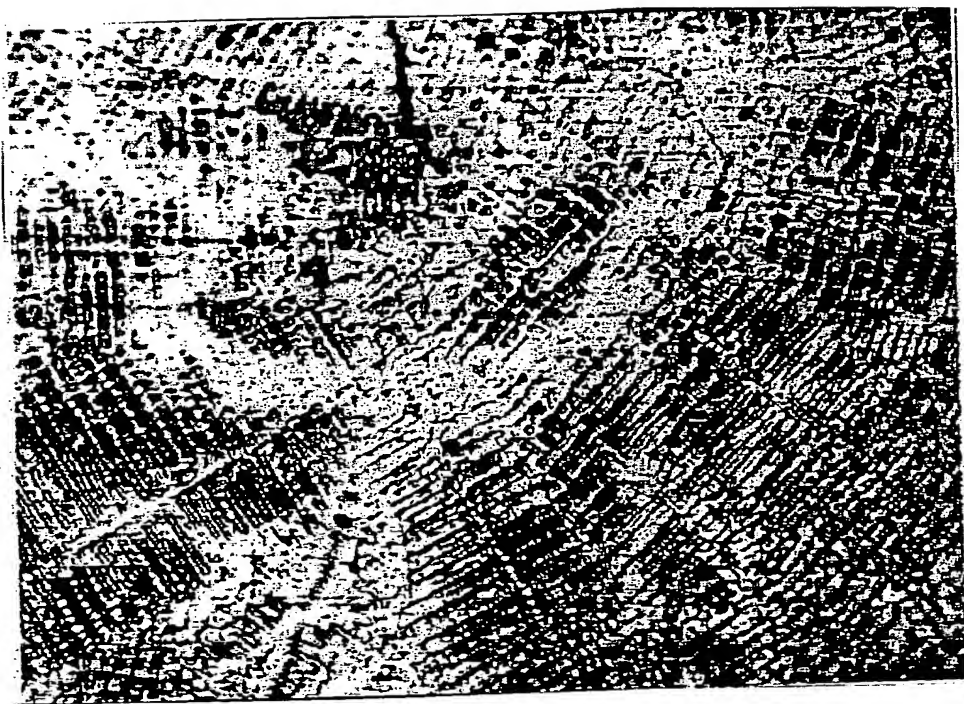


FIG. 20B

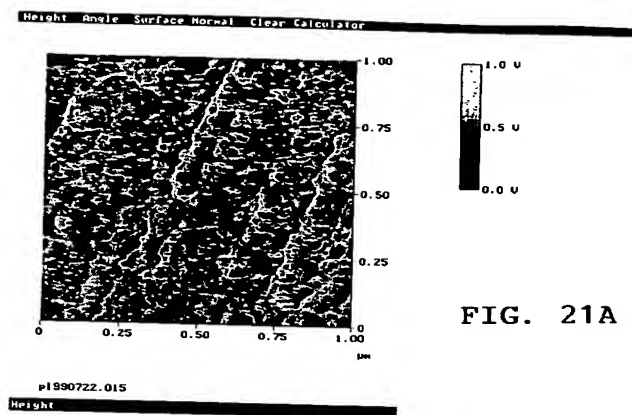


FIG. 21A

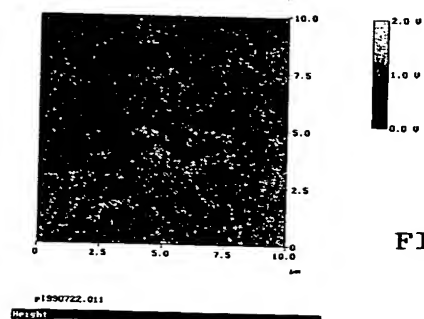


FIG. 21B

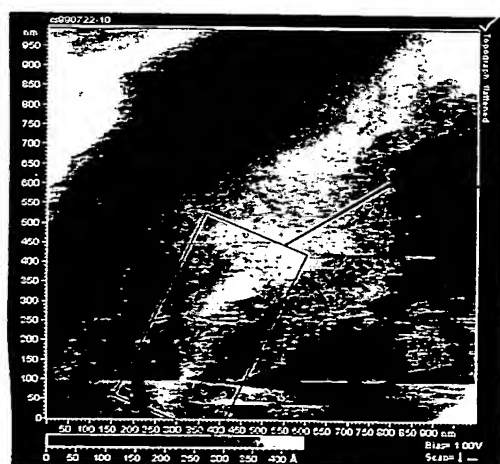


FIG. 21C

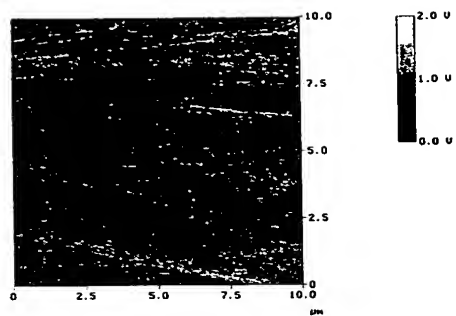


FIG. 22A

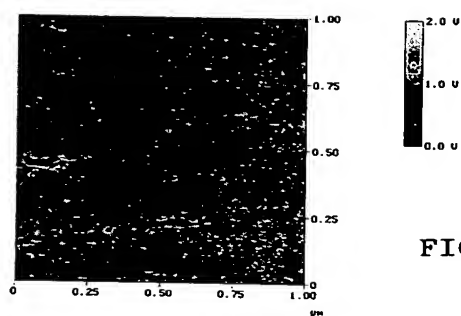


FIG. 22B

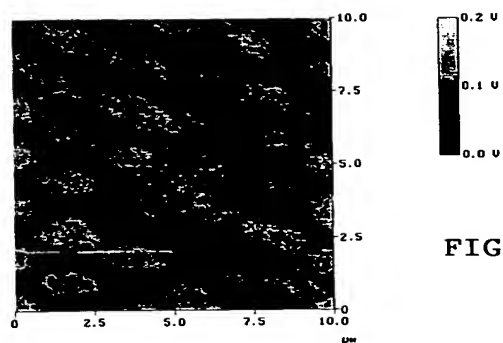


FIG. 22C

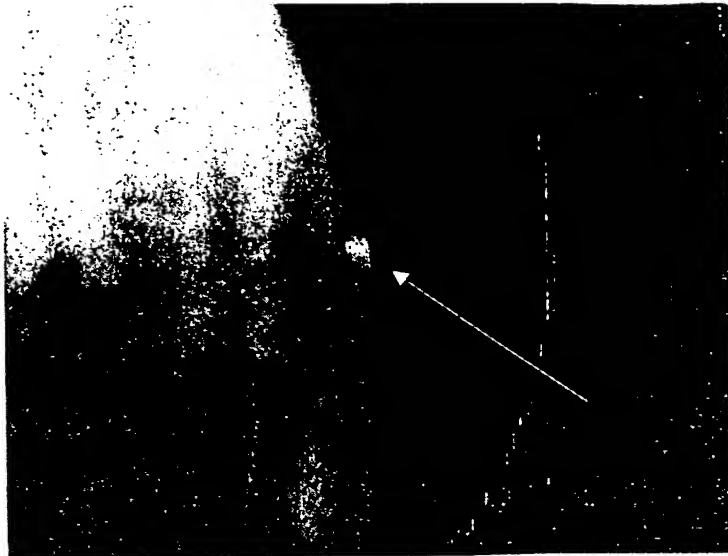


FIG. 23A



FIG. 23B

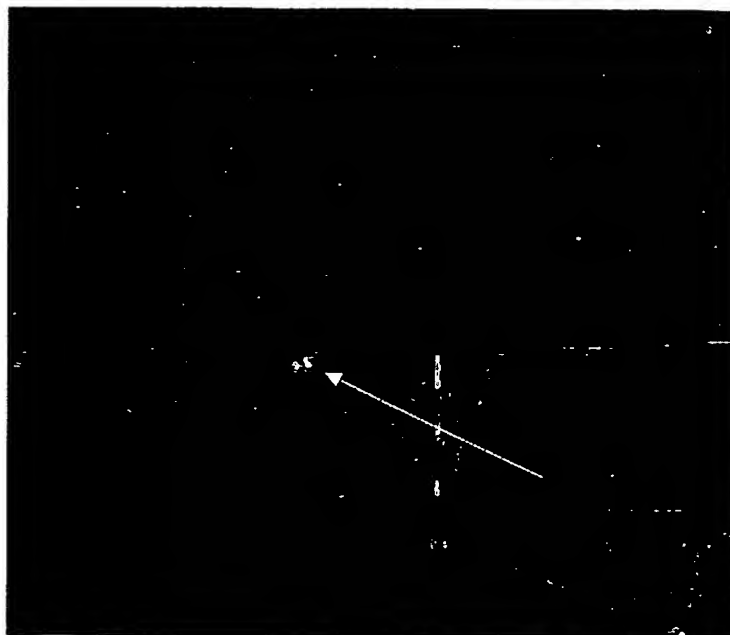


FIG. 23C

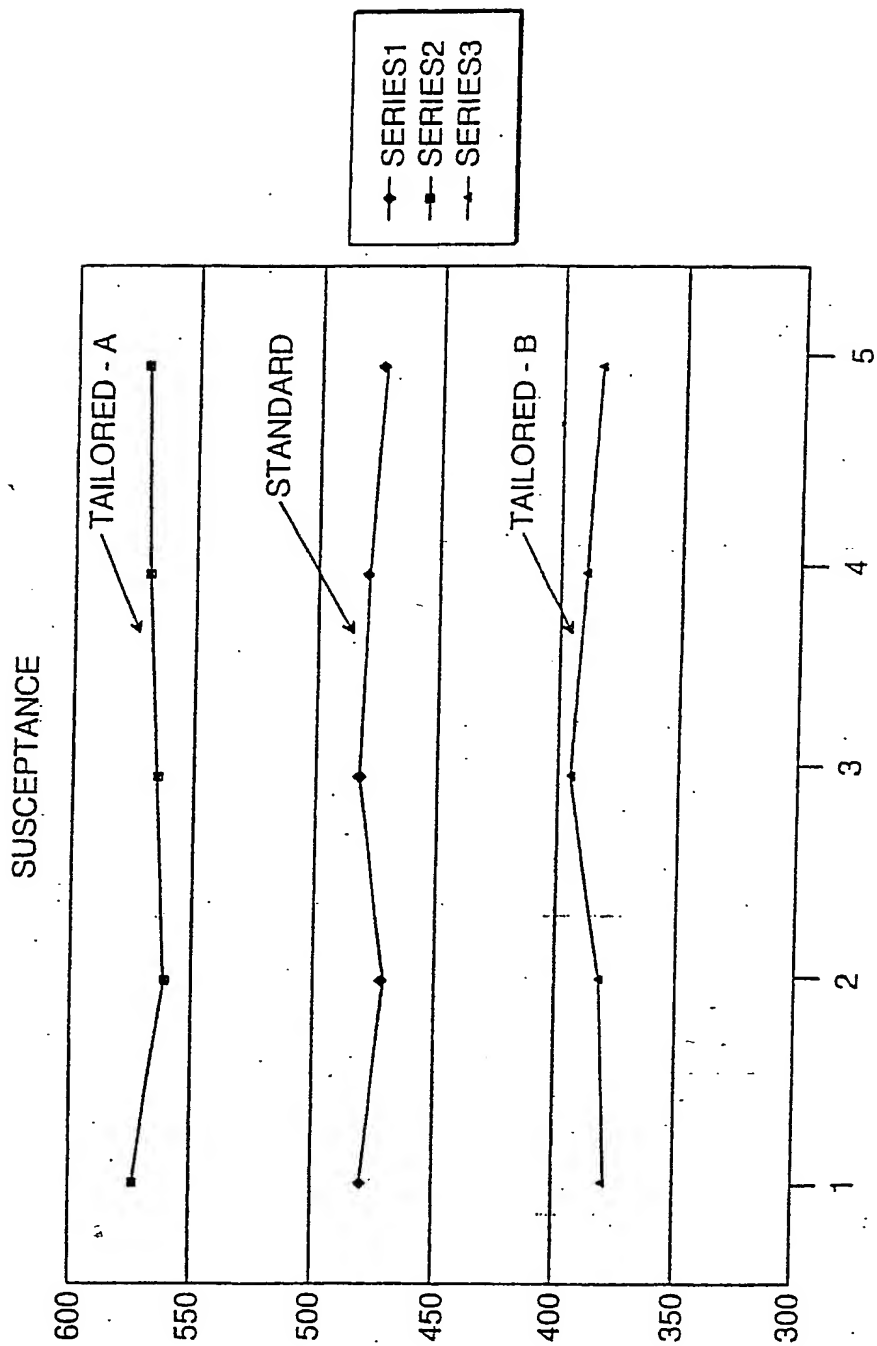


FIG. 24

14-01-01 scans for Copper (LIF220/FPC)

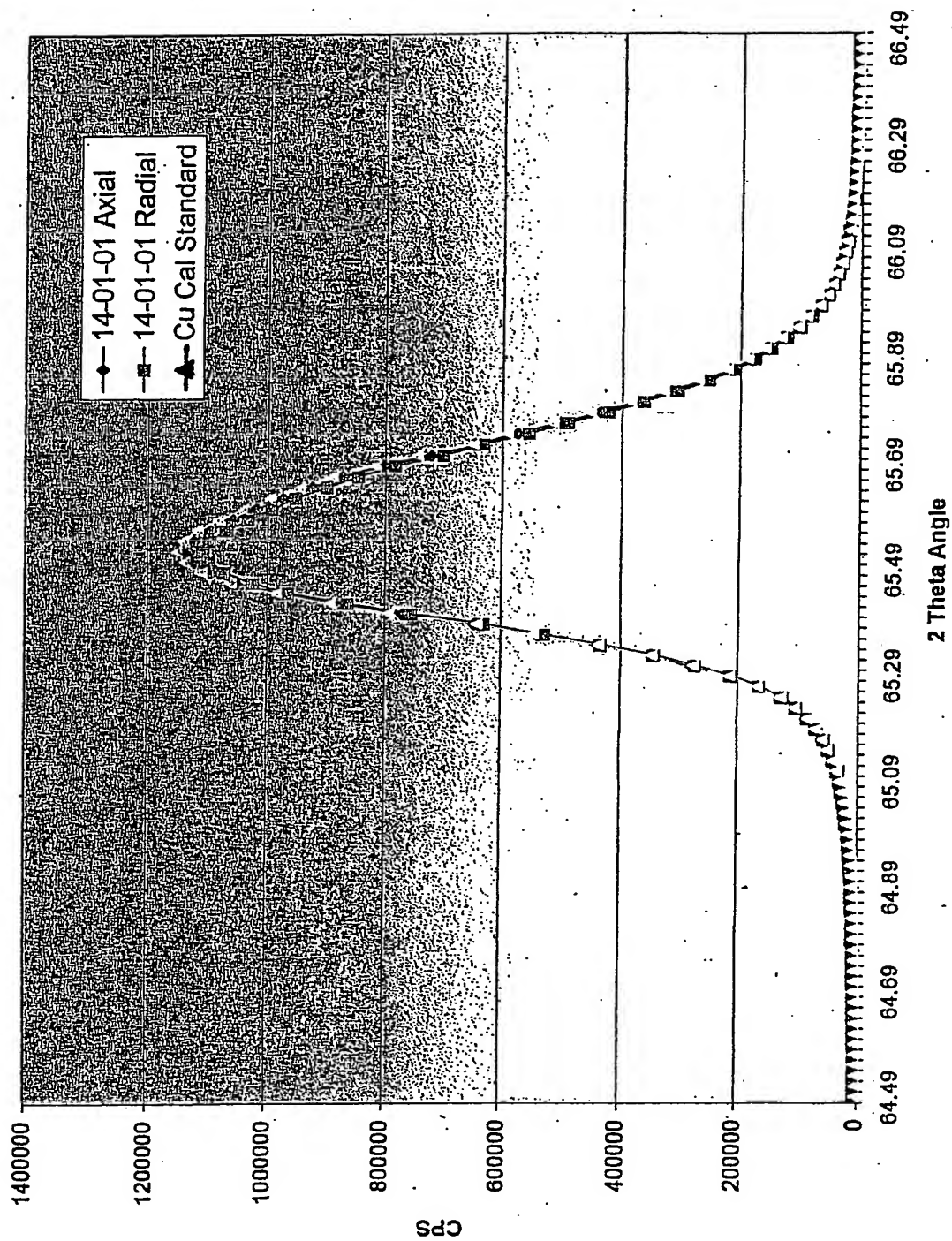


FIG. 25

Al in Copper 14-01-01

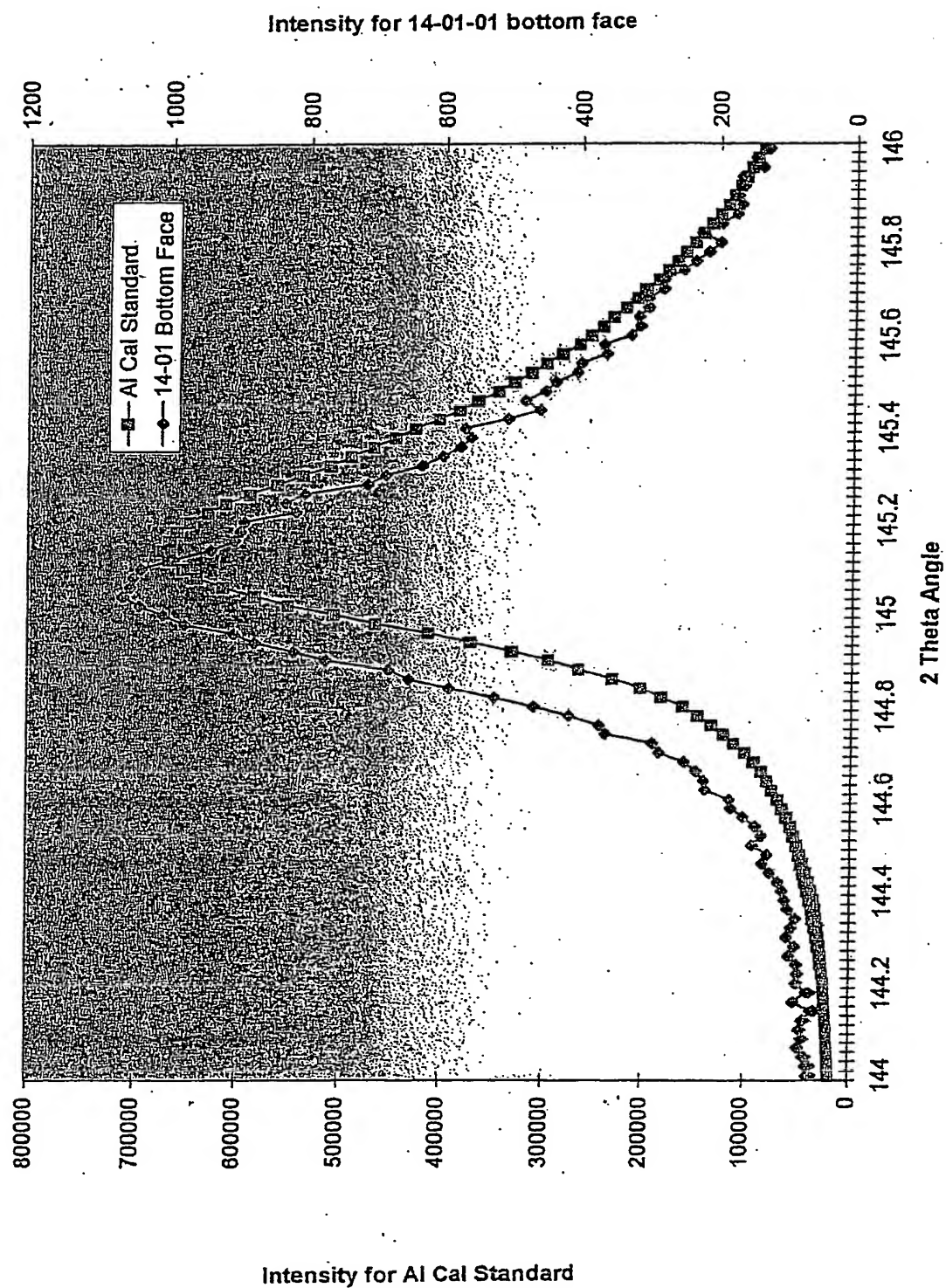
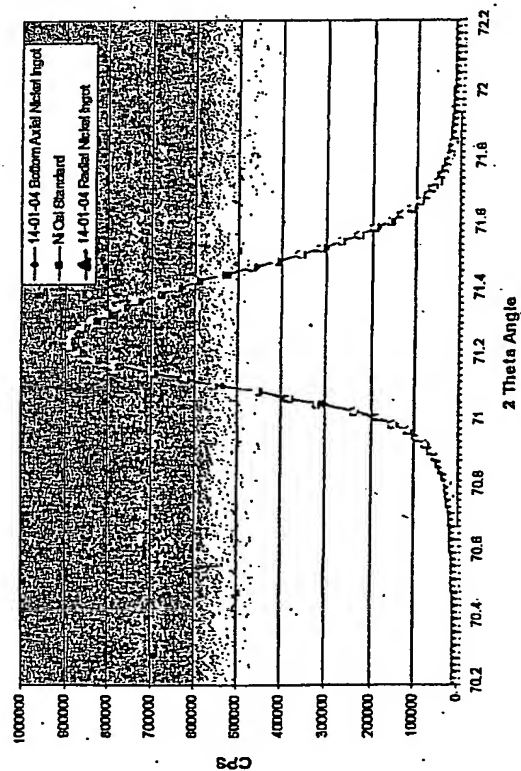


FIG. 26

Nickel Scans: Nickel Analysis



K_α Nickel Scans
Run 14-01-04

FIG. 27A

L_α Nickel Scans
Run 14-01-04

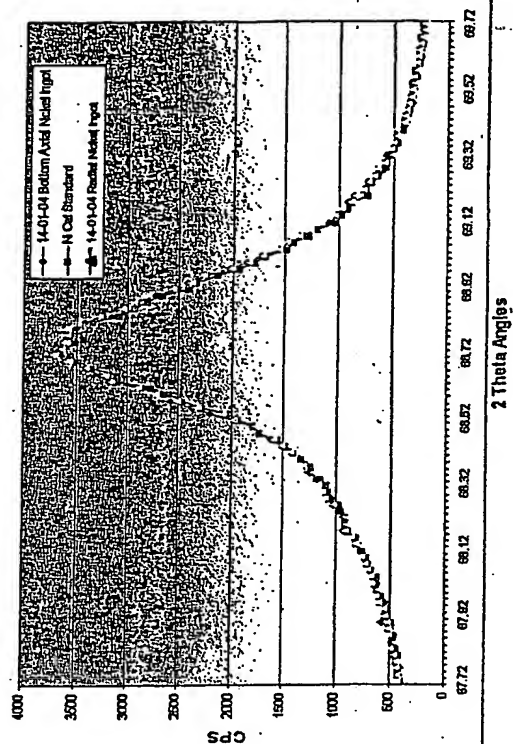


FIG. 27B

Nickel Scans: Al and Zr

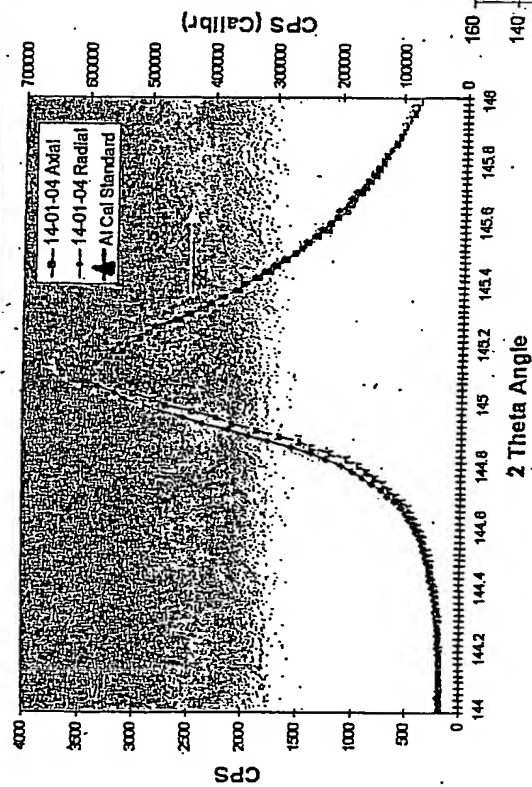


FIG. 28A

K_α Zirconium Scans of Nickel Run 14-01-04

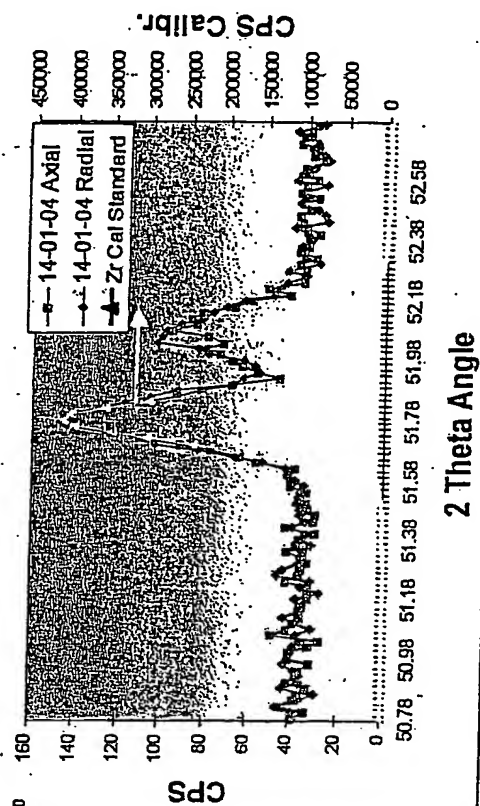
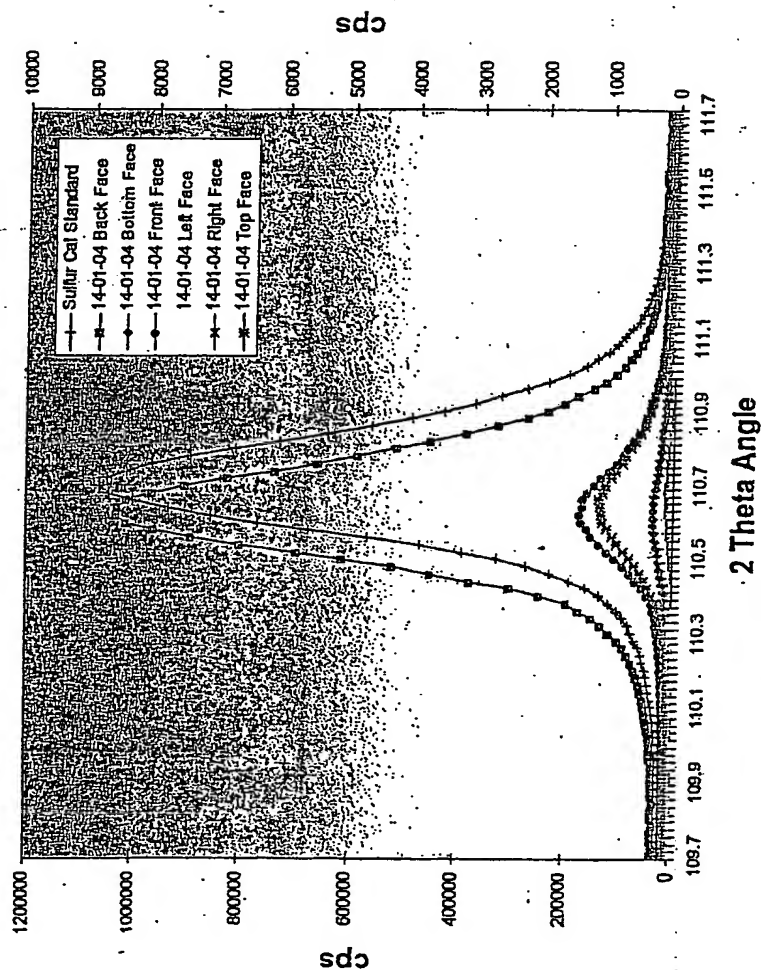


FIG. 28B

Nickel Scans: Sulfur on 6 sides

K_a Sulfur Scans of Nickel
Run 14-01-04



Ingot analyzed on
all six faces

FIG. 29

Nickel Scans: Cl

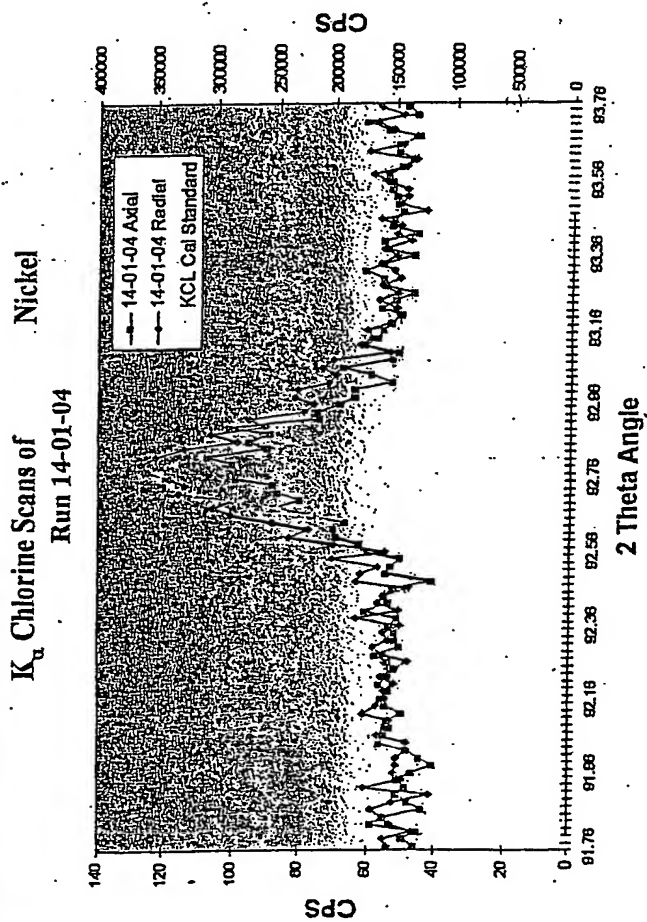
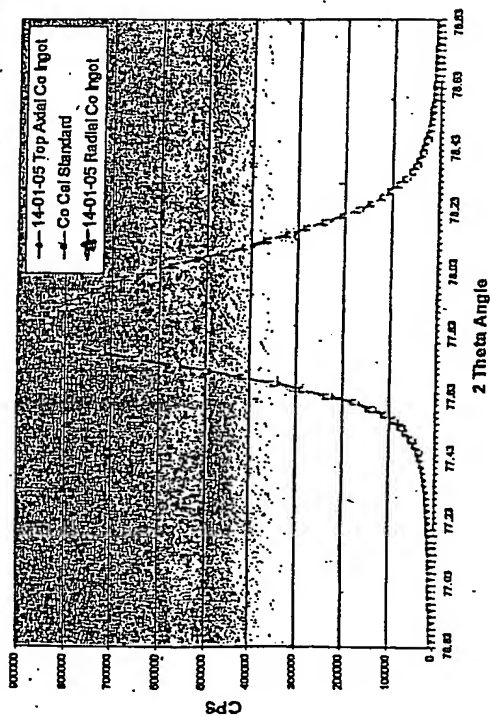


FIG. 30

Cobalt Scans: Cobalt Analysis



L_α Cobalt Scans
Run 14-01-05

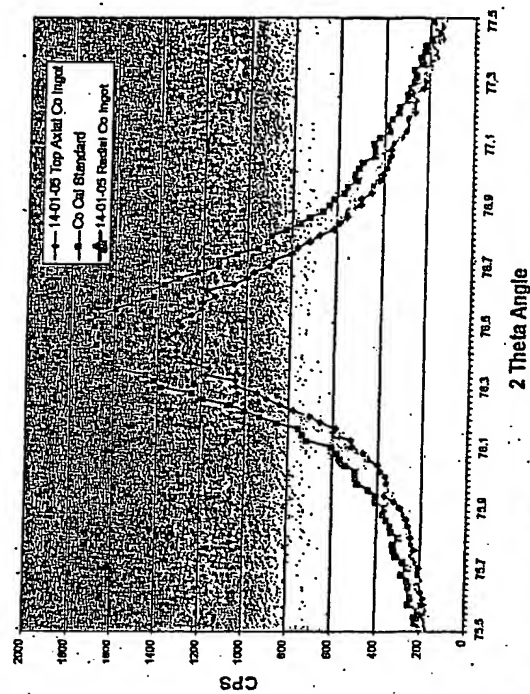
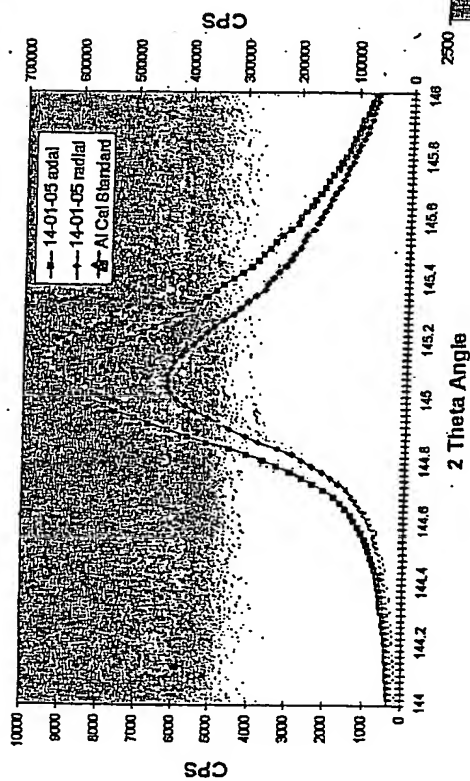


FIG. 31A

FIG. 31B

Cobalt Scans: Al and Fe



K_α Iron Scans of Cobalt

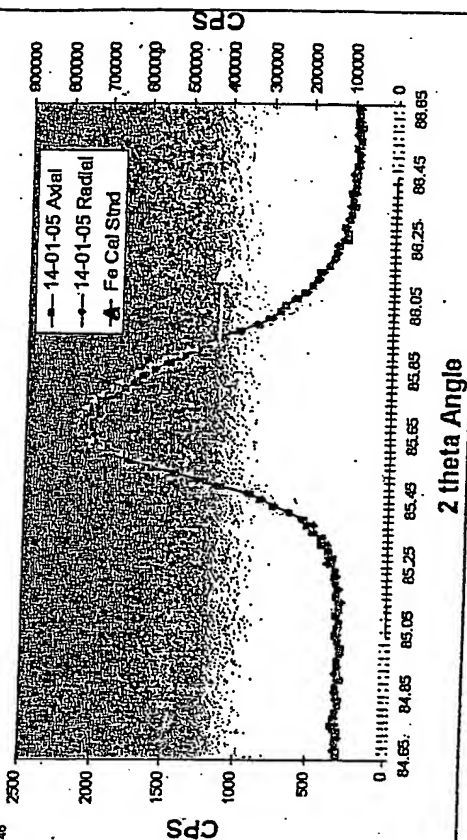


FIG. 32A

FIG. 32B

Cobalt Scans: Cl and Zr

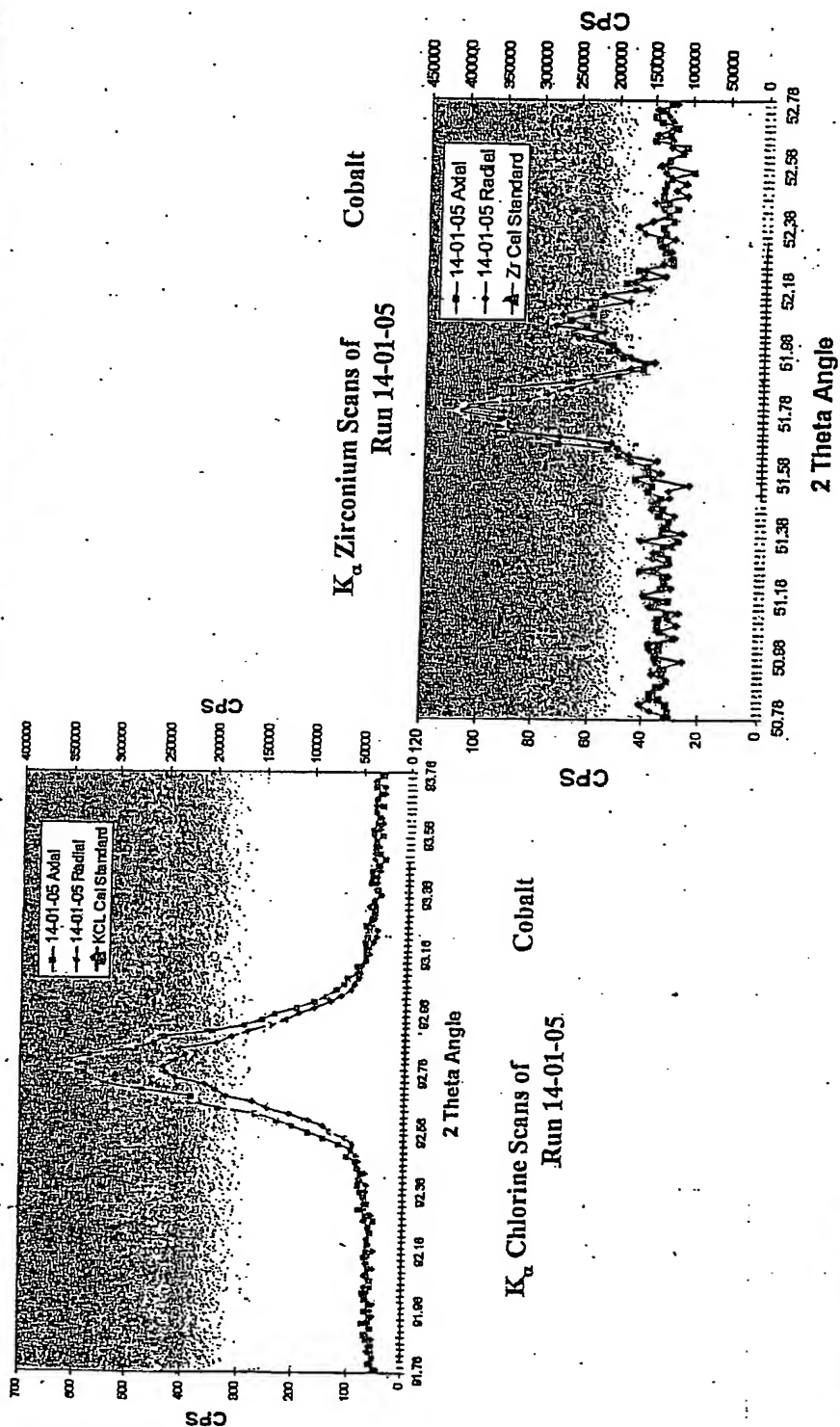
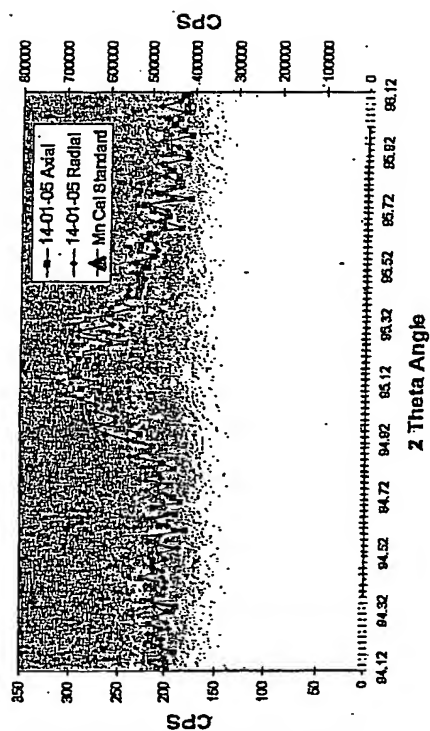


FIG. 33A

FIG. 33B

Cobalt Scans: Mn



K_α Manganese Scans of Cobalt
Run 14-01-05

FIG. 34

14-01-06 Cu - Axial and Radial Samples vs Cu Cal Standard (LiF200/FPC)

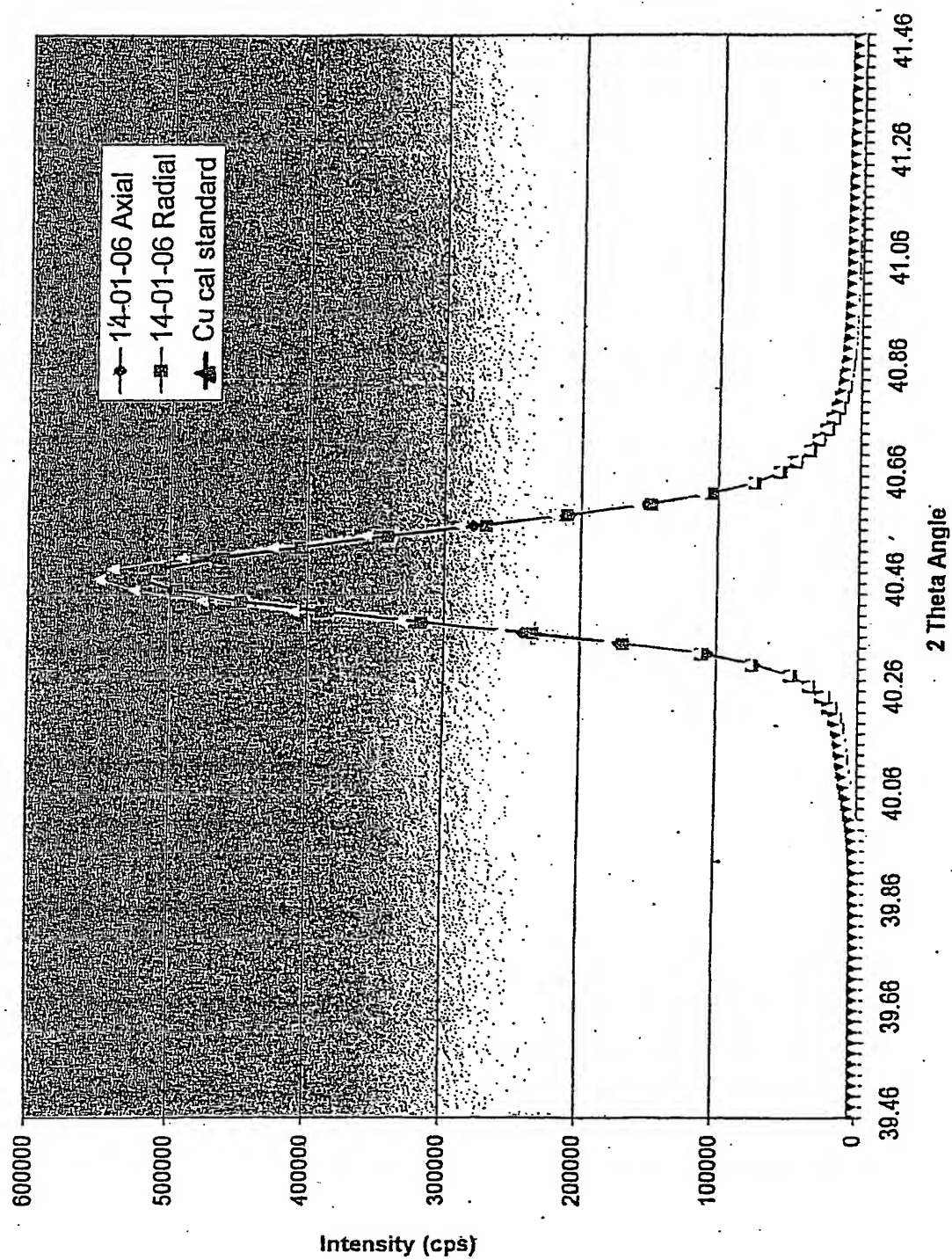


FIG. 35

14-01-06 Au- Axial and Radial Samples vs Au Cal Standard (LIF420/SC)

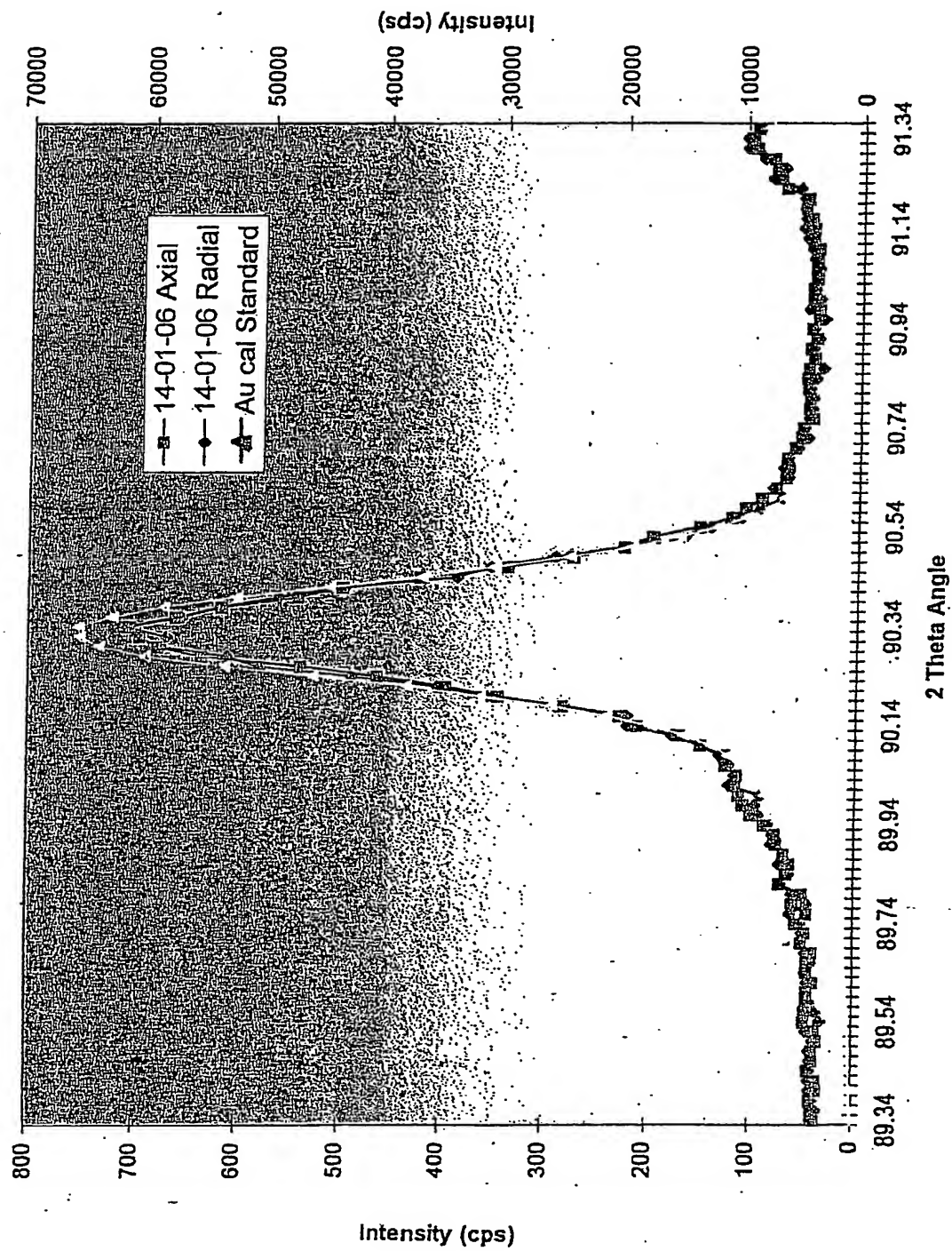


FIG. 36

14-01-06 Ag: Axial and Radial Samples vs Ag Cal Standard (LiF220/SC)

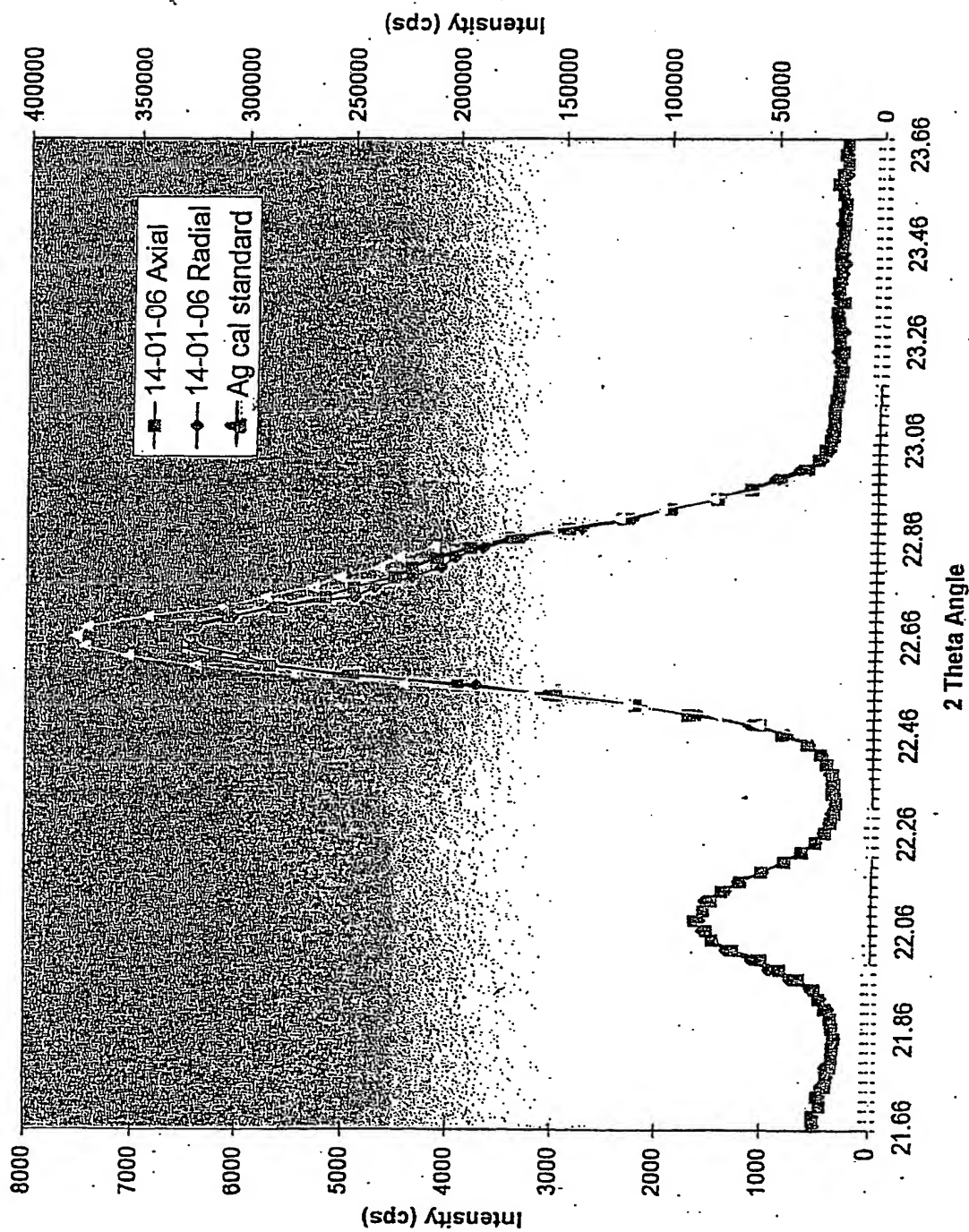


FIG. 37

14-01-07 Sn-Axial and Radial vs Sn Cal Standard

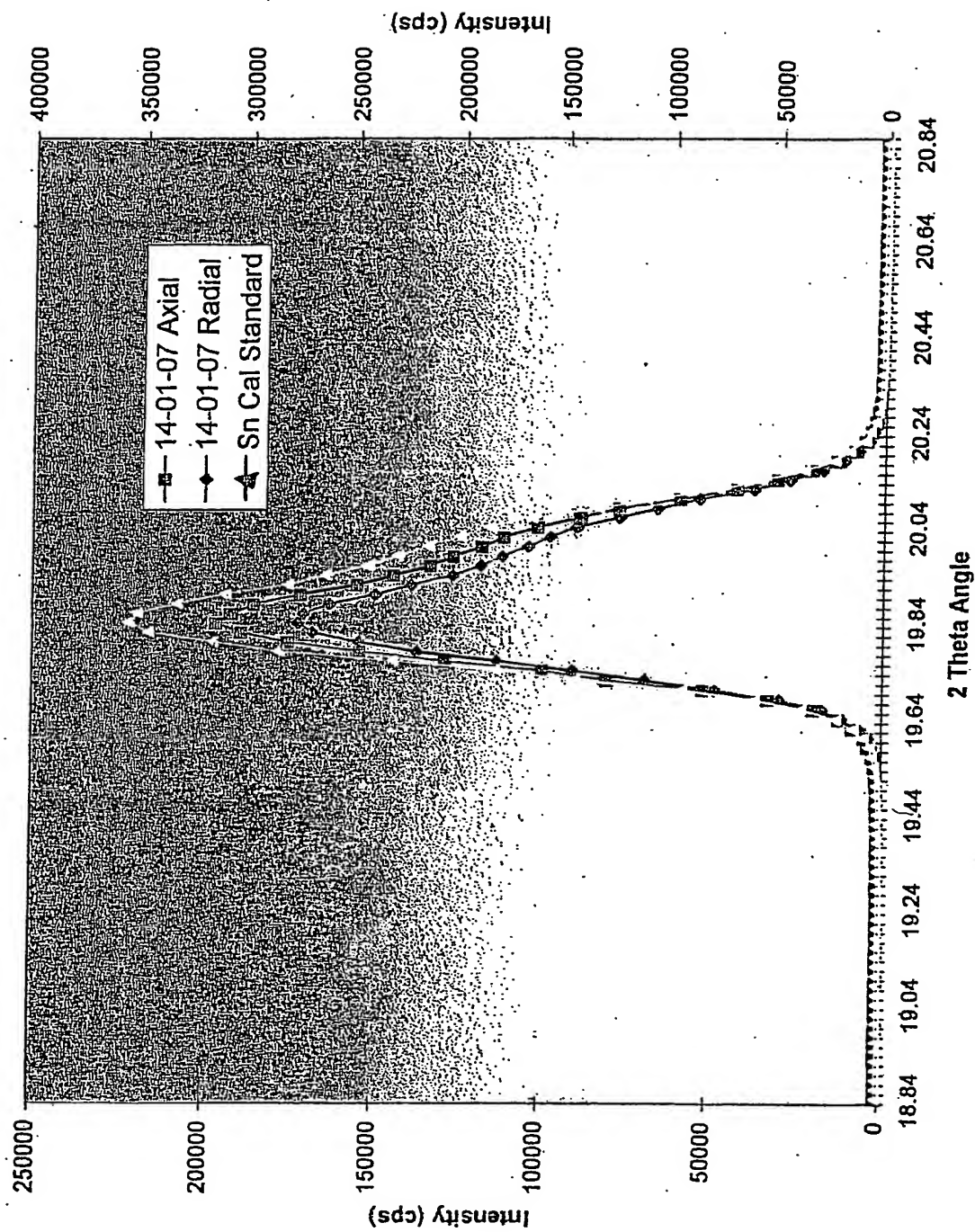


FIG. 38

14-01-07 Zn-- Axial and Radial vs Zn Cal Standard (LIF220/FPC)

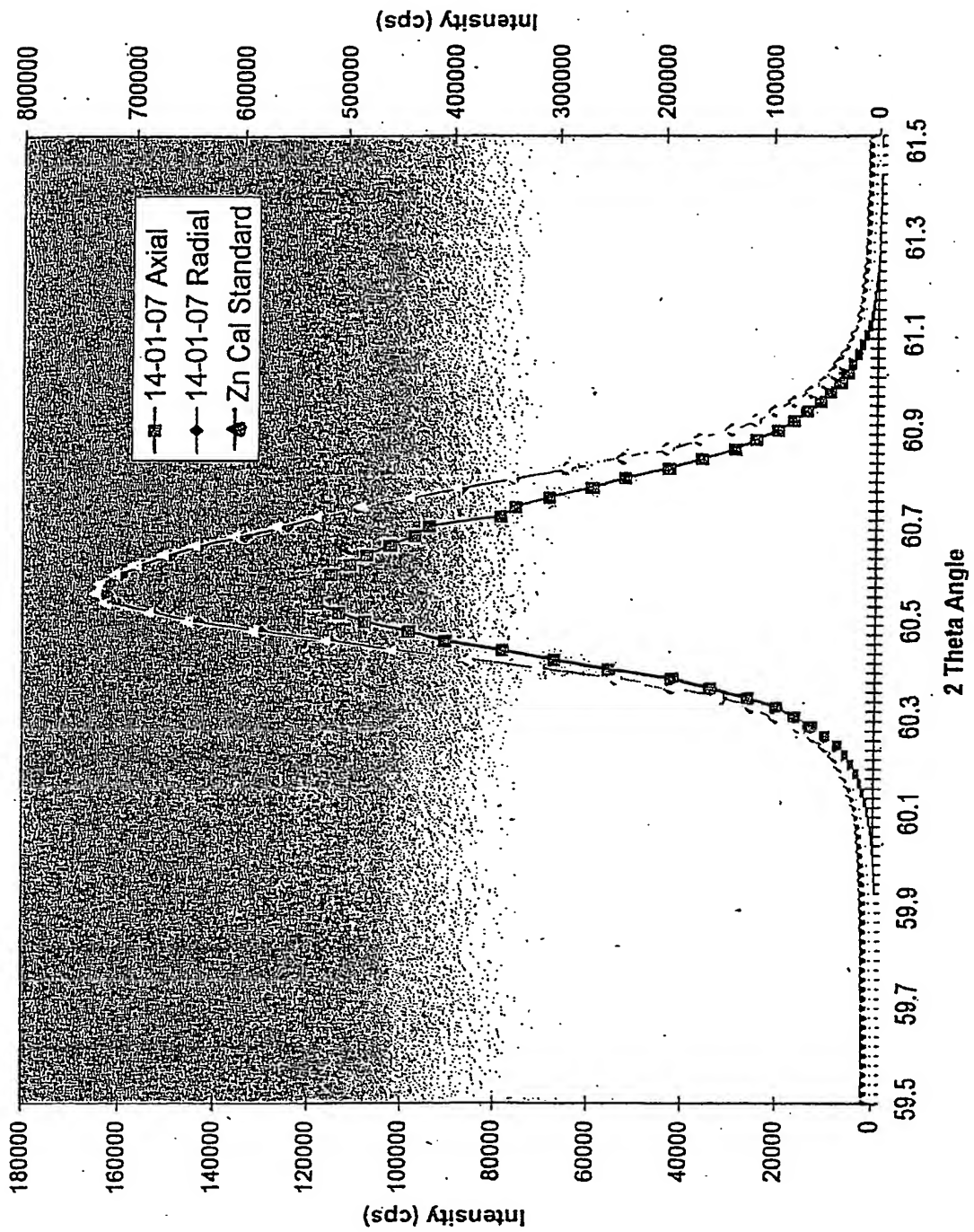


FIG. 39

14-01-07 Pb- Axial and Radial vs Pb Cal Standard

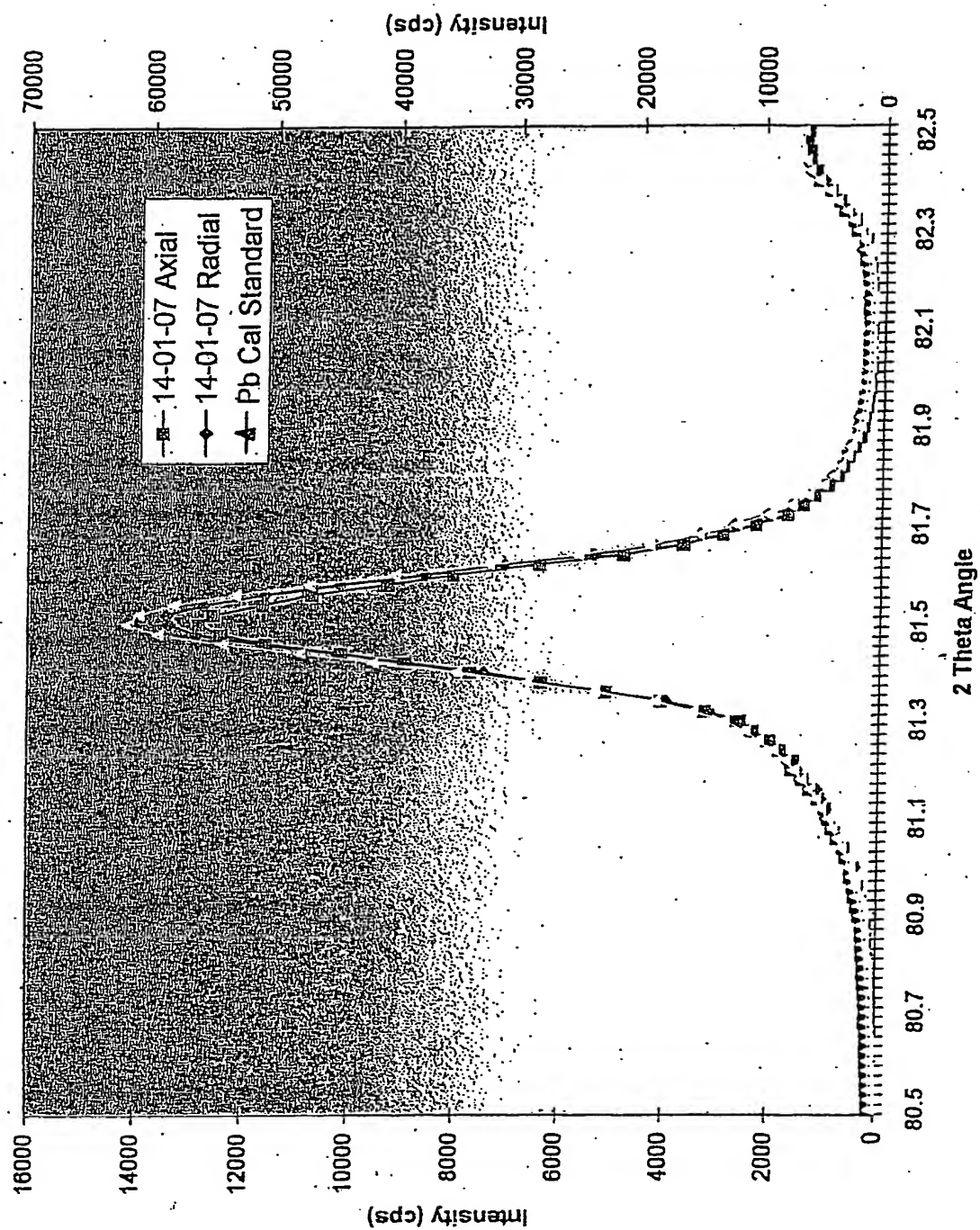


FIG. 40

14-01-08 scans for K

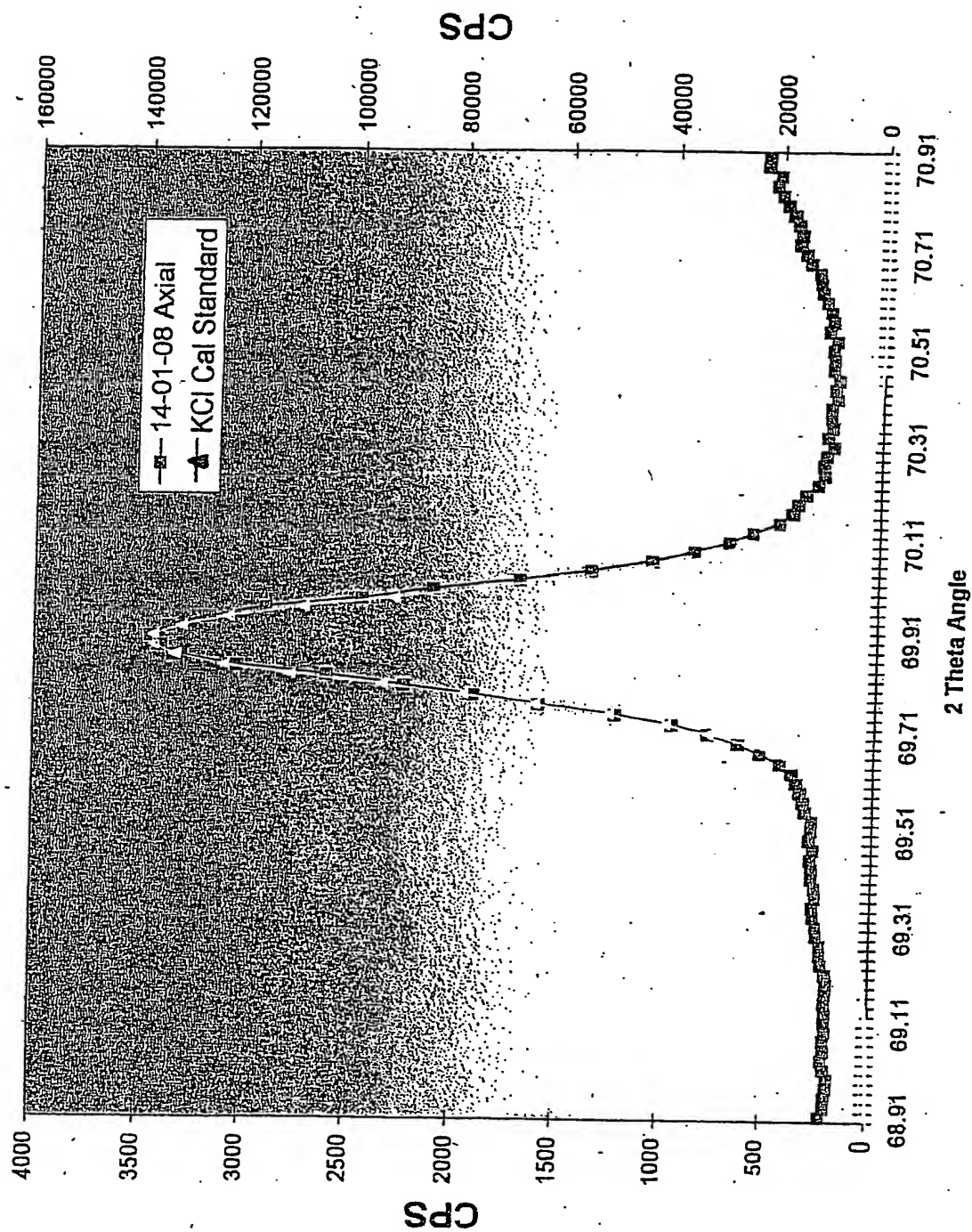


FIG. 41

14-01-08 Sn- Axial and Radial vs Sn Cal Standard

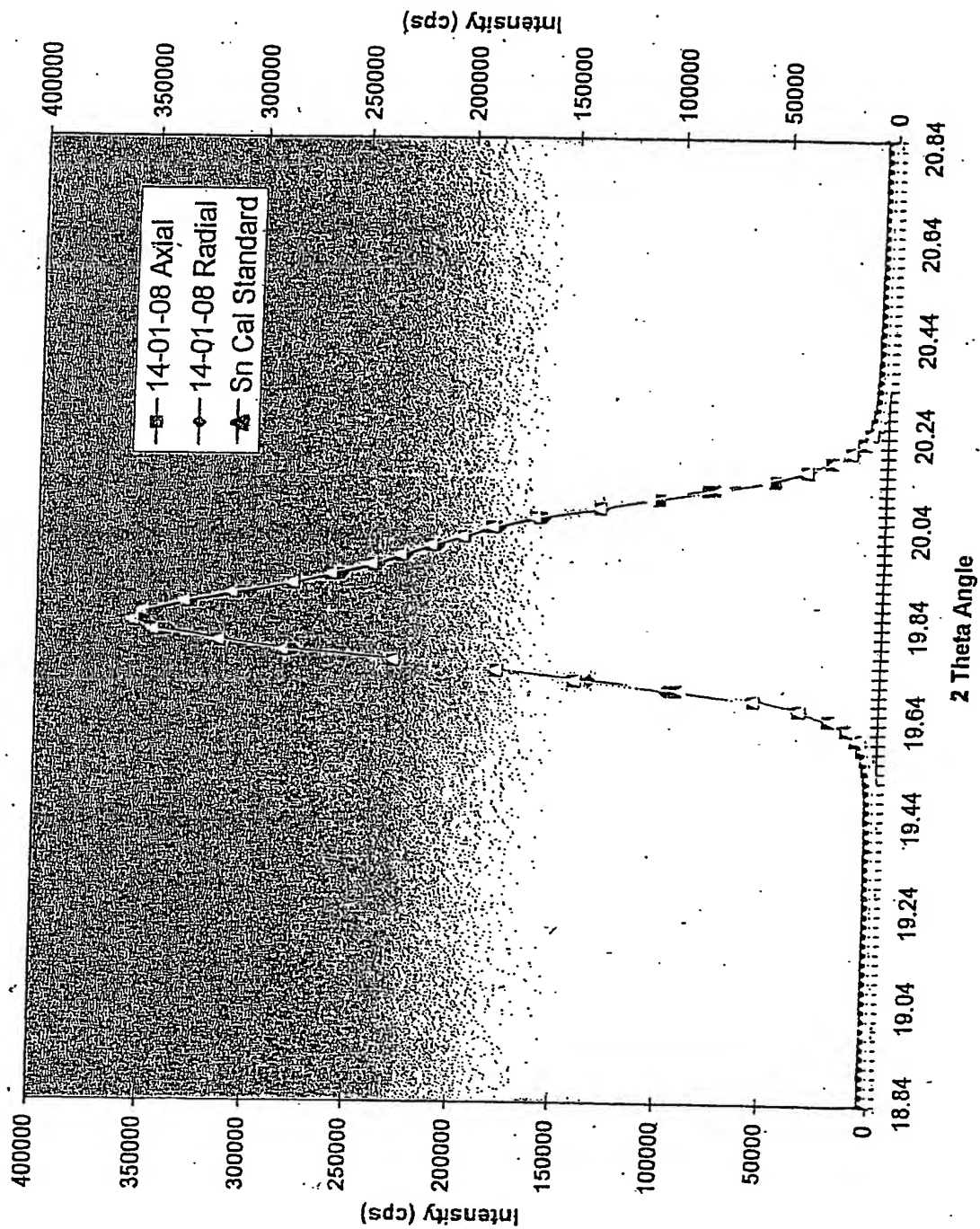


FIG. 42

14-01-08 Mg- Axial and Radial Samples vs MgO Cal Standard

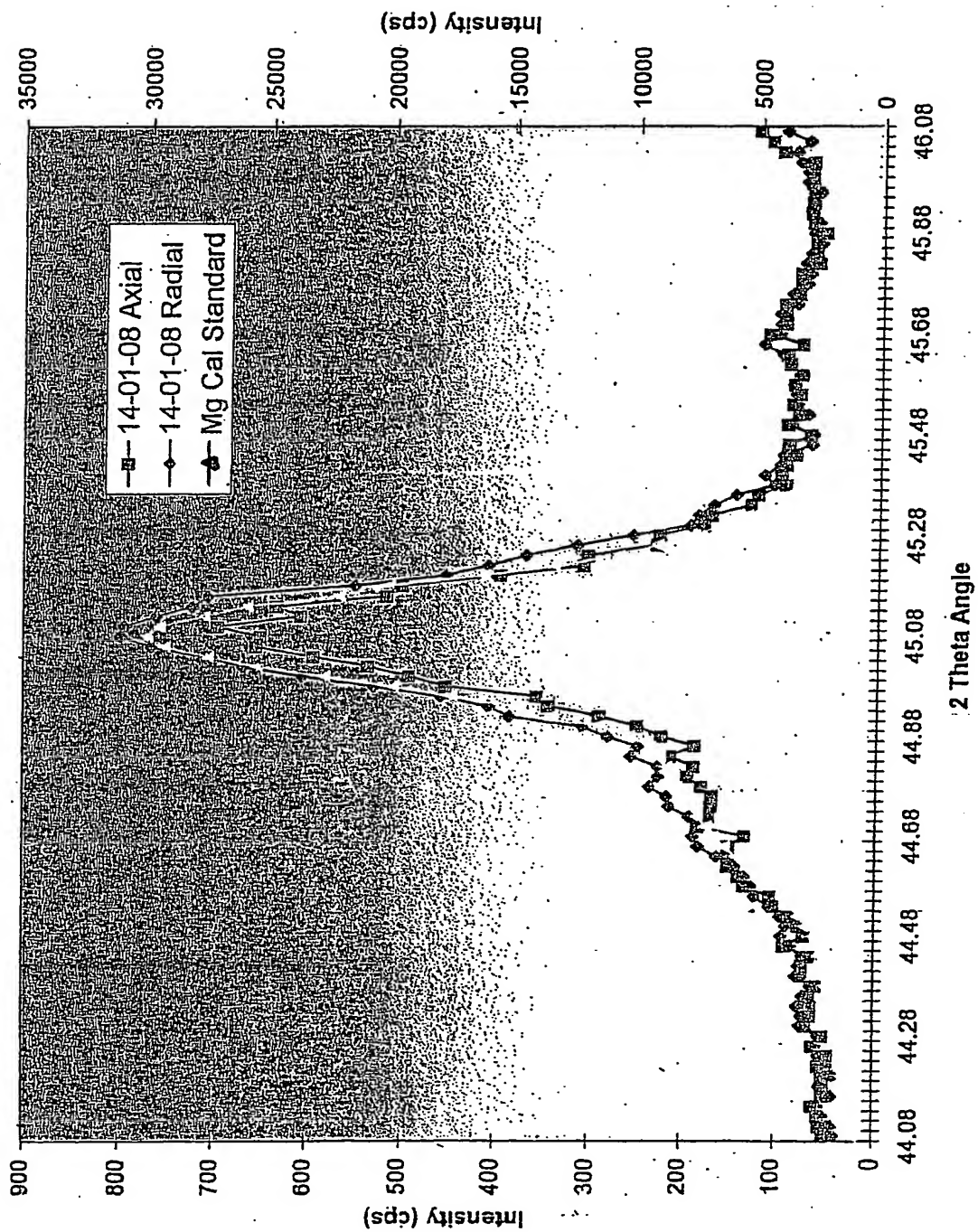


FIG. 43

14-01-08 Na- Axial and Radial Samples vs AlNa3F6 Cal Standard

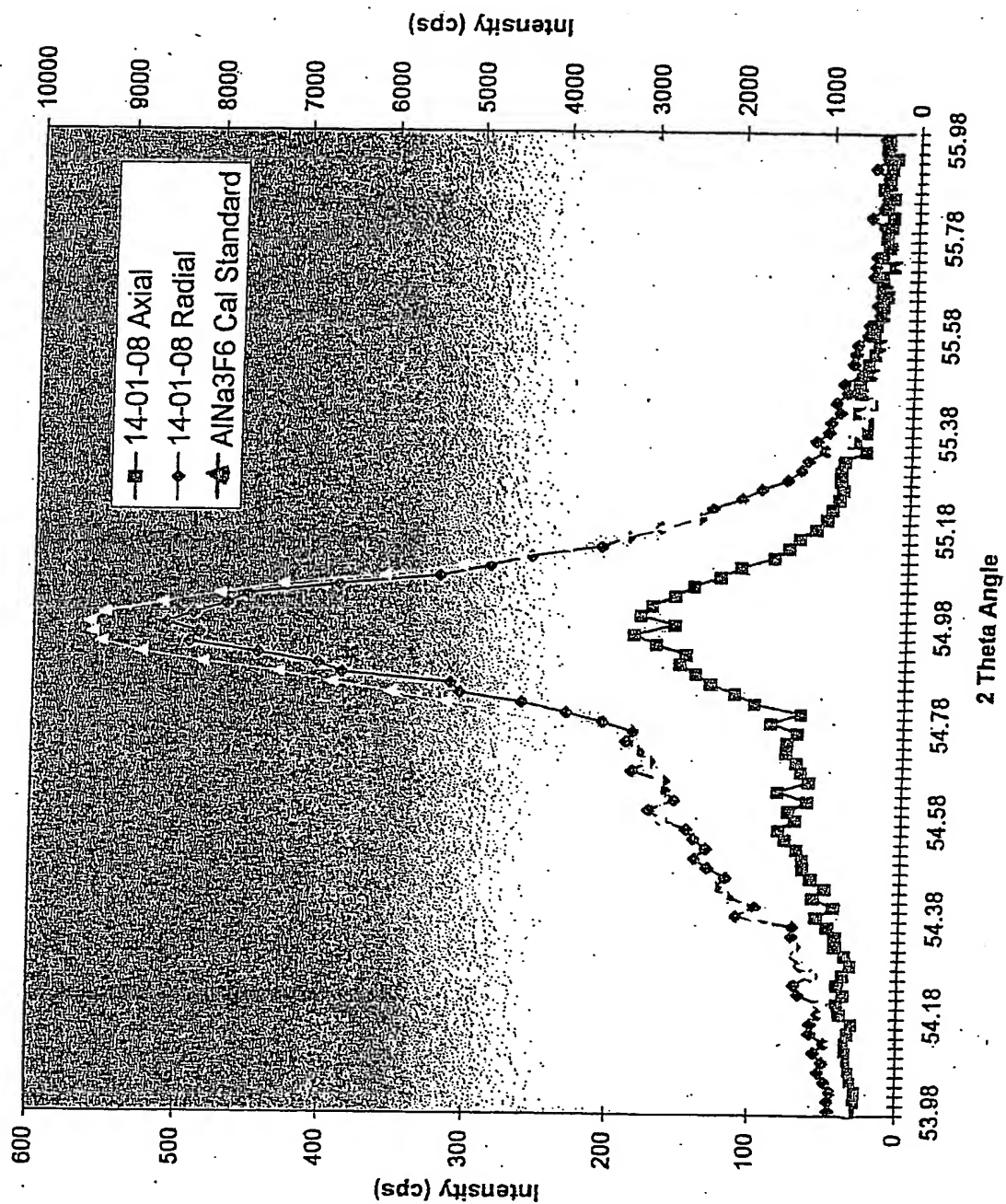
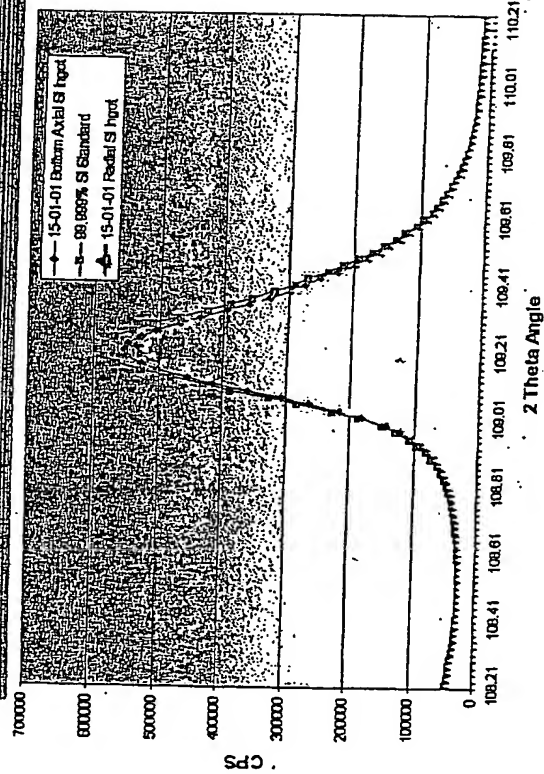


FIG. 44

Silicon Scans: Silicon Analysis



L_p Silicon Scans
Run 15-01-01

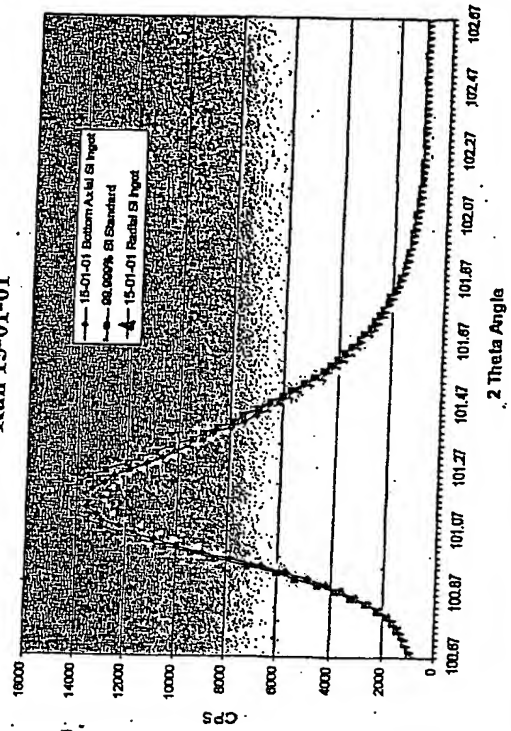
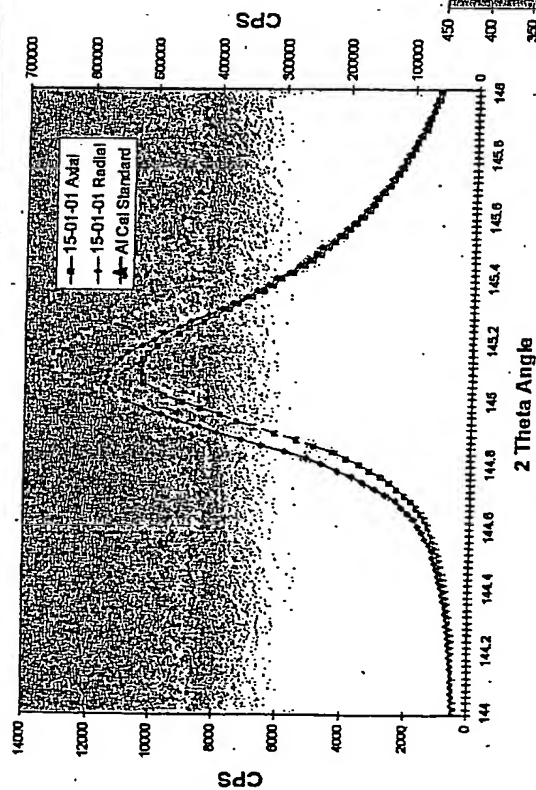


FIG. 45B

FIG. 45A

Silicon Scans: Al and Ti



K_α Aluminum Scans of Silicon
Run 15-01-01

K_α Titanium Scans of Silicon
Run 15-01-01

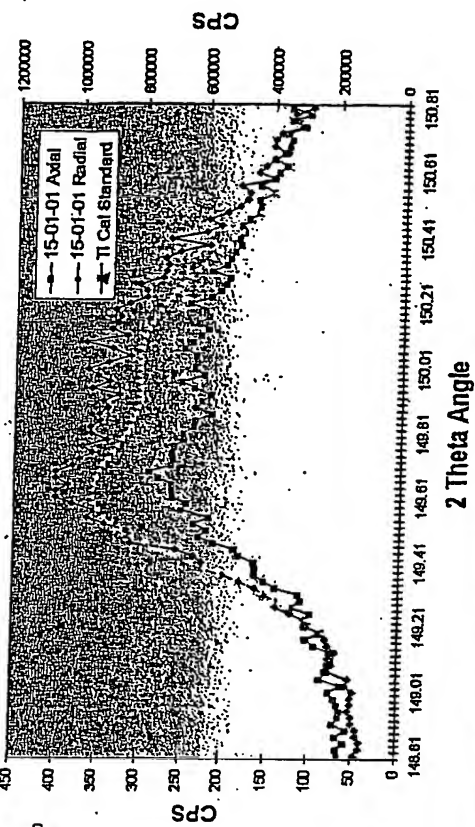
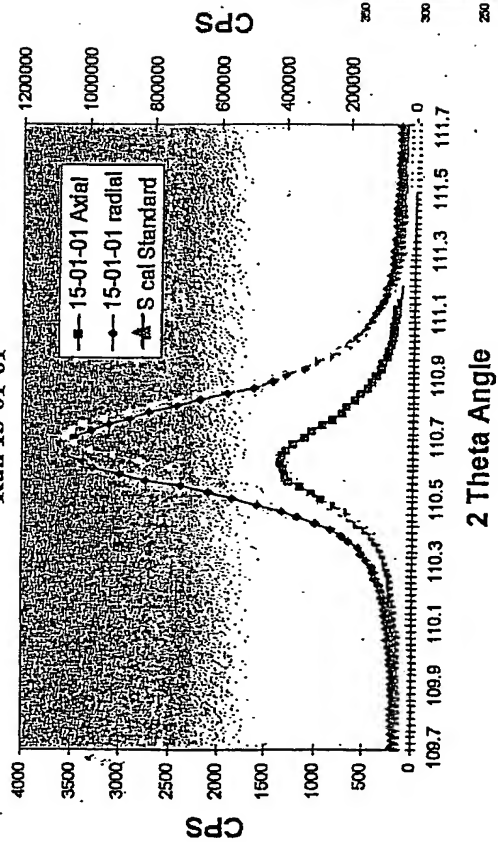


FIG. 46A

FIG. 46B

Silicon Scans: S and Cl

K_α Sulfur Scans of Silicon
Run 15-01-01



K_α Chlorine Scans of Silicon
Run 15-01-01

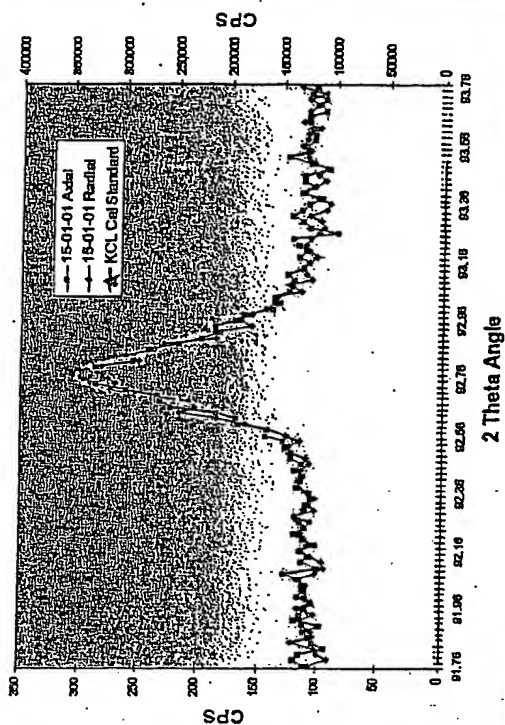
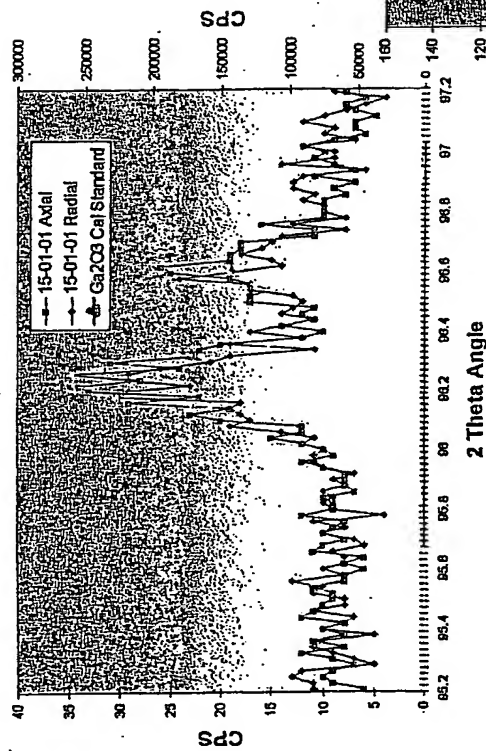


FIG. 47A

FIG. 47B

Silicon Scans: Ga and K

K_{α} Gallium Scans of Silicon
Run 15-01-01



K_{α} Potassium Scans of Silicon
Run 15-01-01

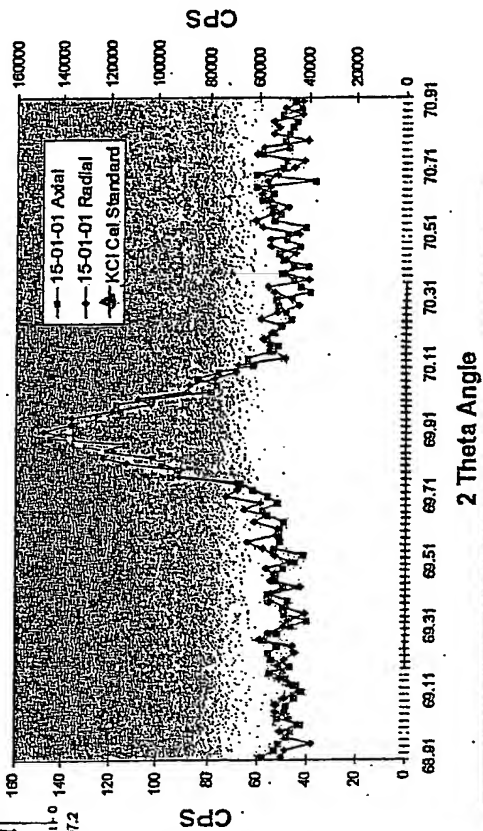
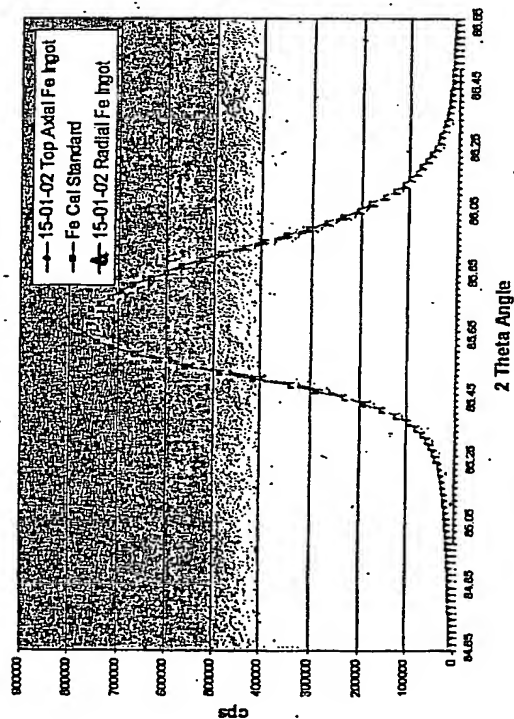


FIG. 48B

FIG. 48A

Iron Scans: Iron Analysis



K_{α} Iron Scans of Iron
Run 15-01-02

L_{α} Iron Scans of Iron
Run 15-01-02

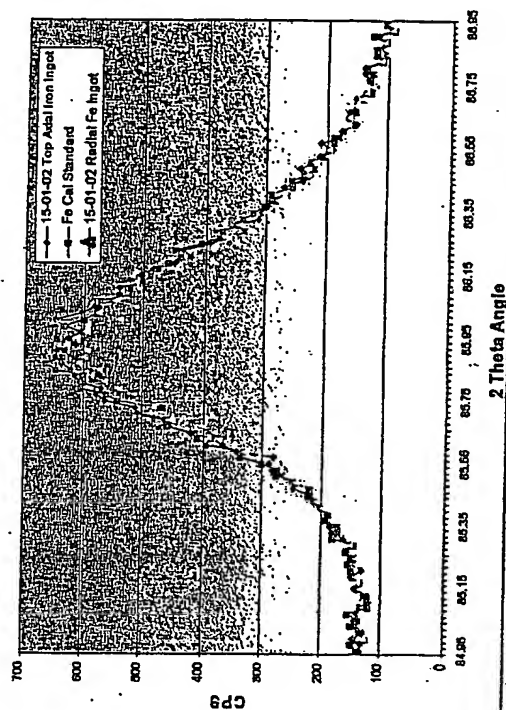
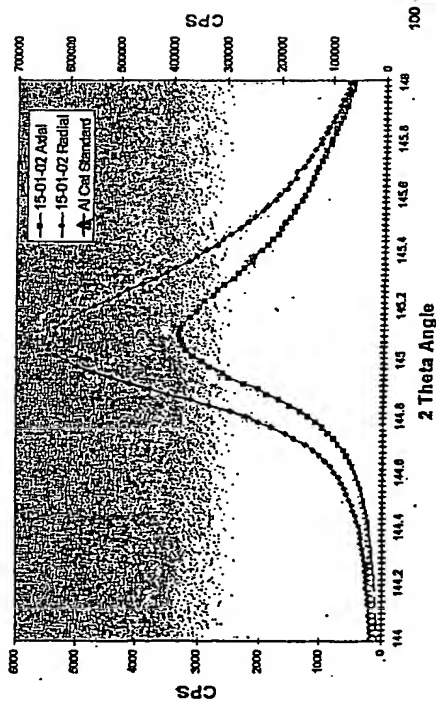


FIG. 49A

FIG. 49B

Iron Scans: Al and Zr



K_α Zr Scans of Iron
Run 15-01-02

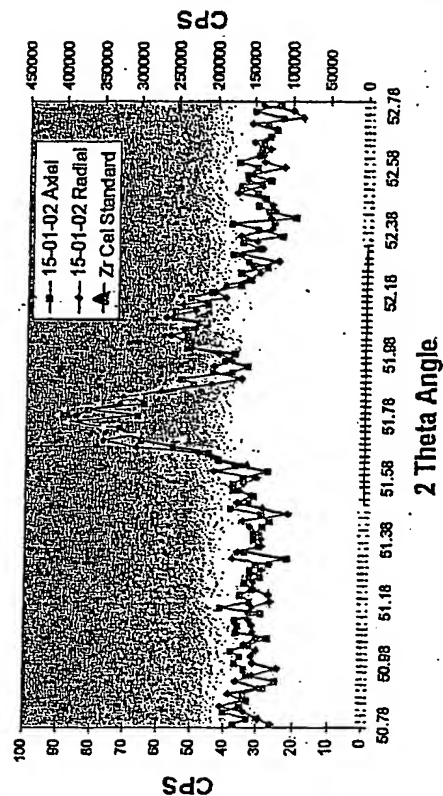
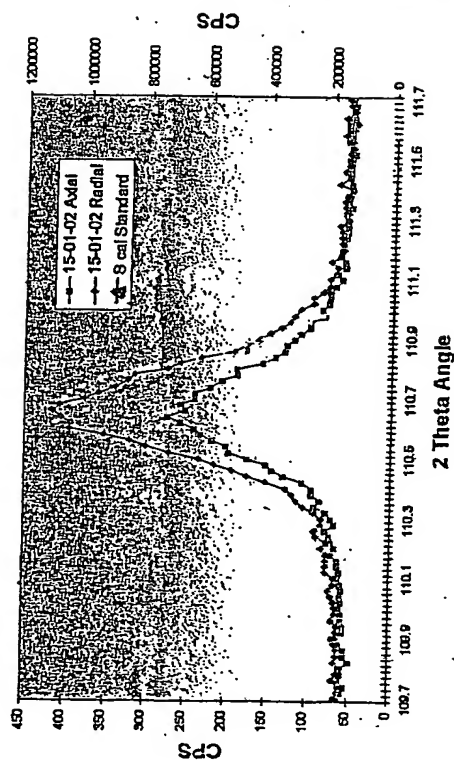


FIG. 50A

FIG. 50B

Iron Scans: S and Cl

K_α Sulfur Scans of Iron
Run 15-01-02



K_α Chlorine Scans of Iron
Run 15-01-02

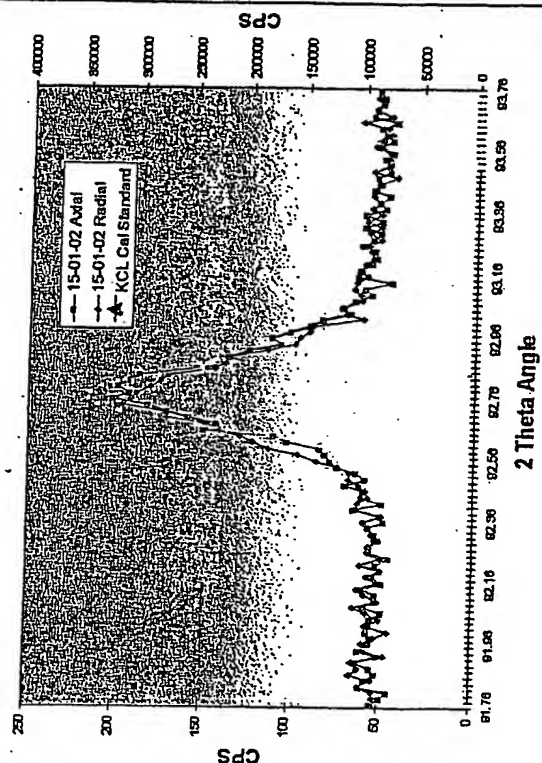


FIG. 51B

FIG. 51A

15-01-03 Cr- Axial and Radial Samples vs Cr2O3 Cal Standard (LiF220/FPC)

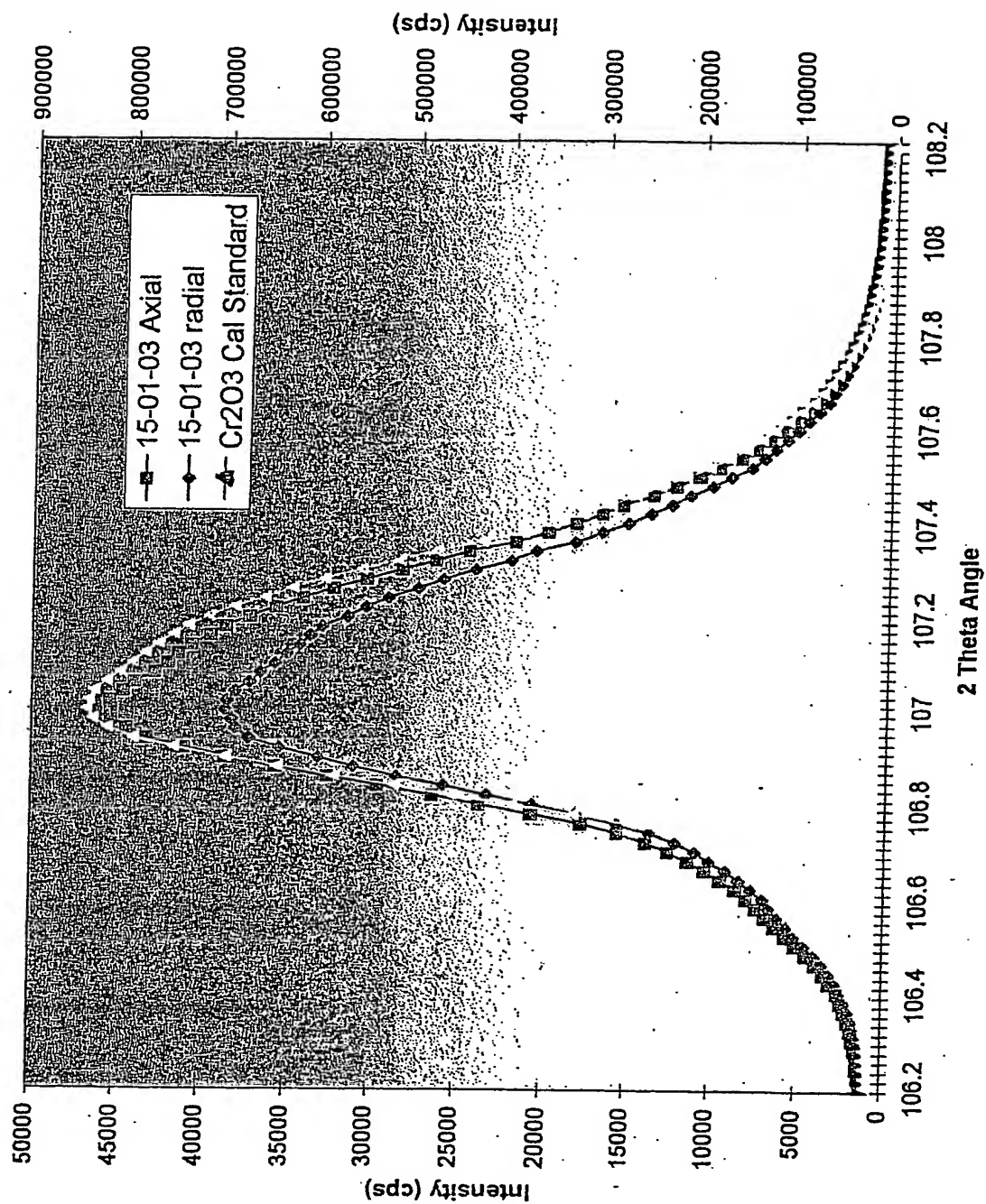


FIG. 52

15-01-03 Fe- Axial and Radial vs Fe Cal Standard (LiF220/FPC)

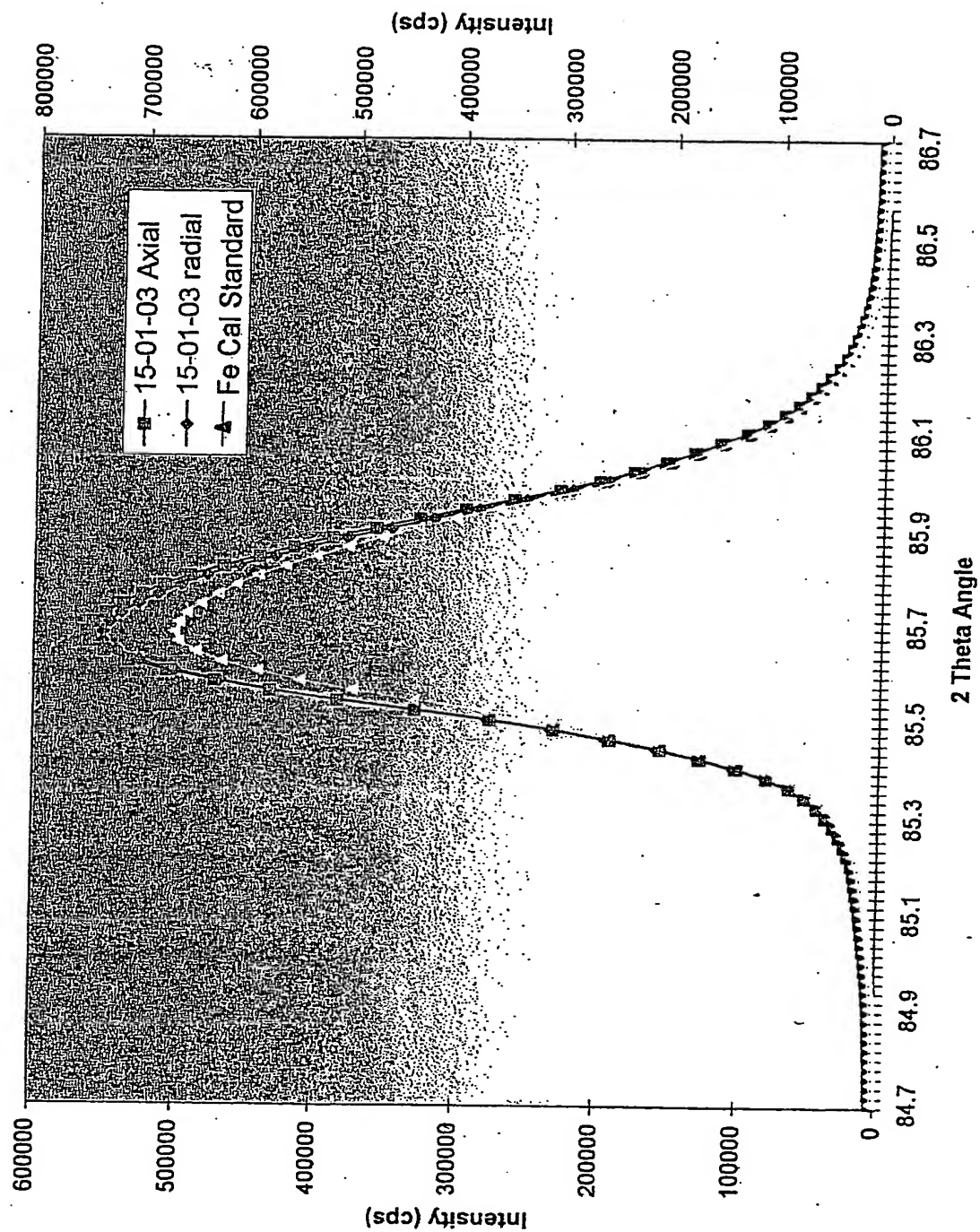


FIG. 53

15-01-03 V- axial and radial samples vs V cal standard (LiF220/FPC)

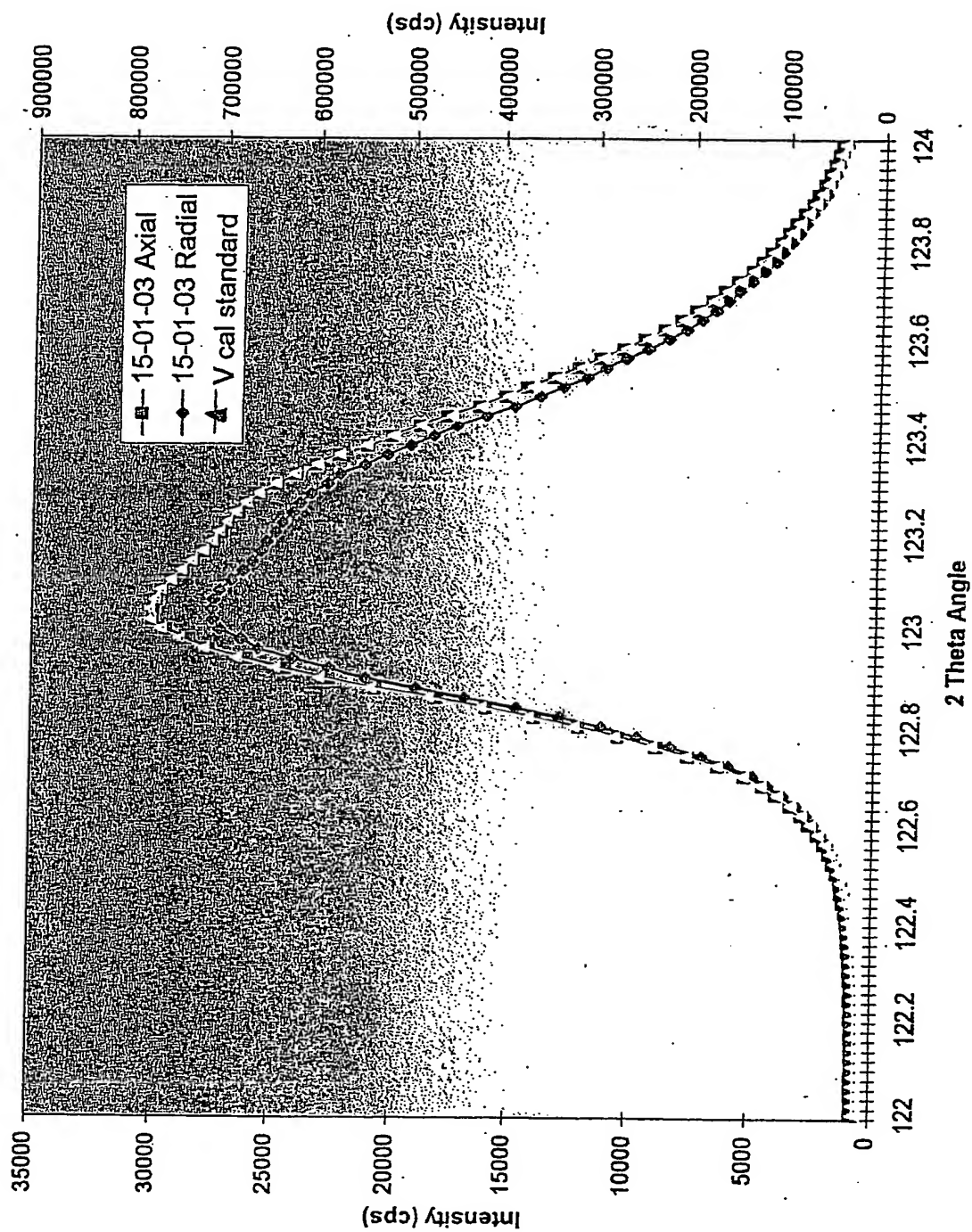


FIG. 54

15-01-03 Mn- Axial and Radial Sample vs Mn Cal Standard (LiF220/FPC)

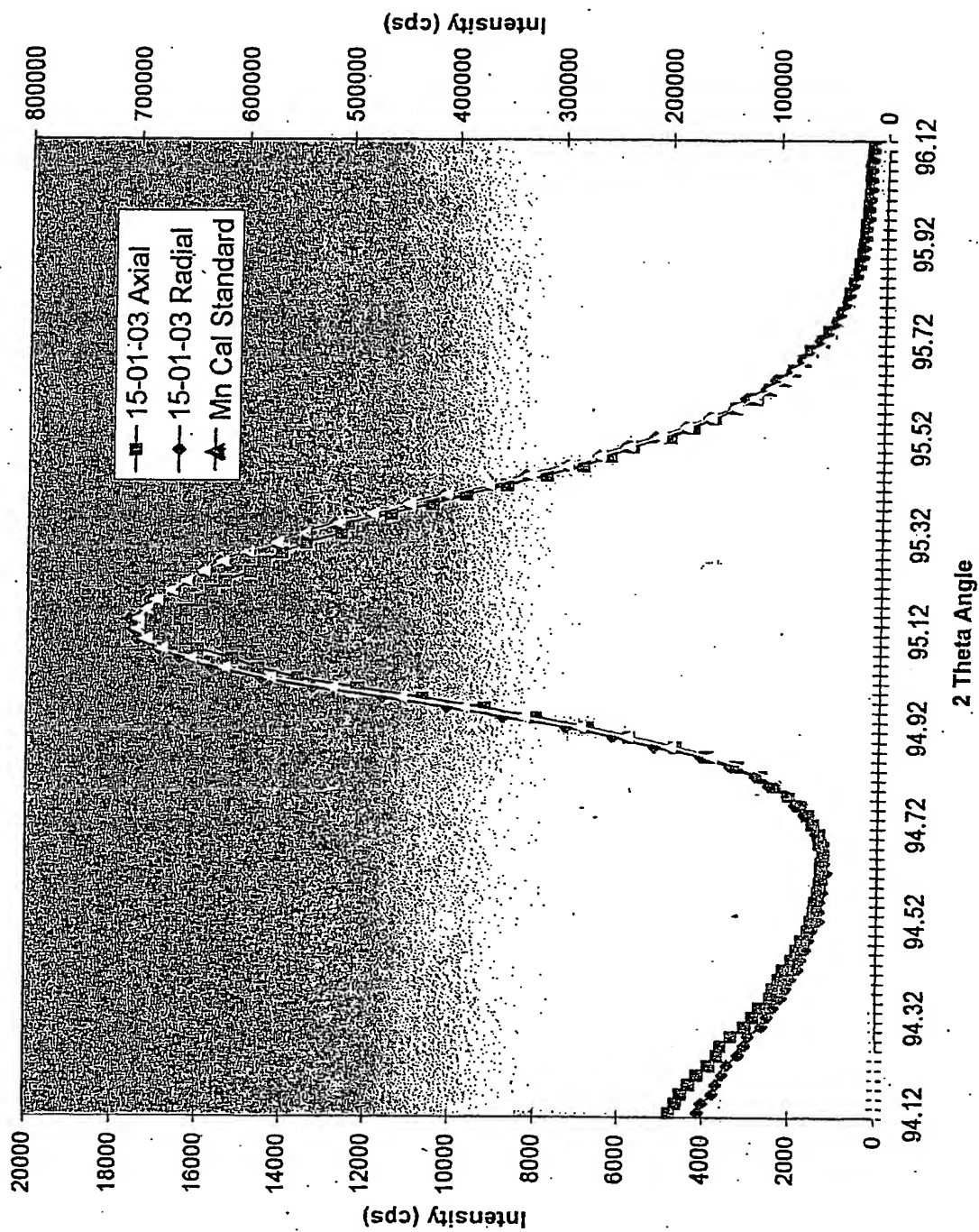


FIG. 55

15-01-03 Cube scans for Sulfur (6 Sides) Ge111/FPC

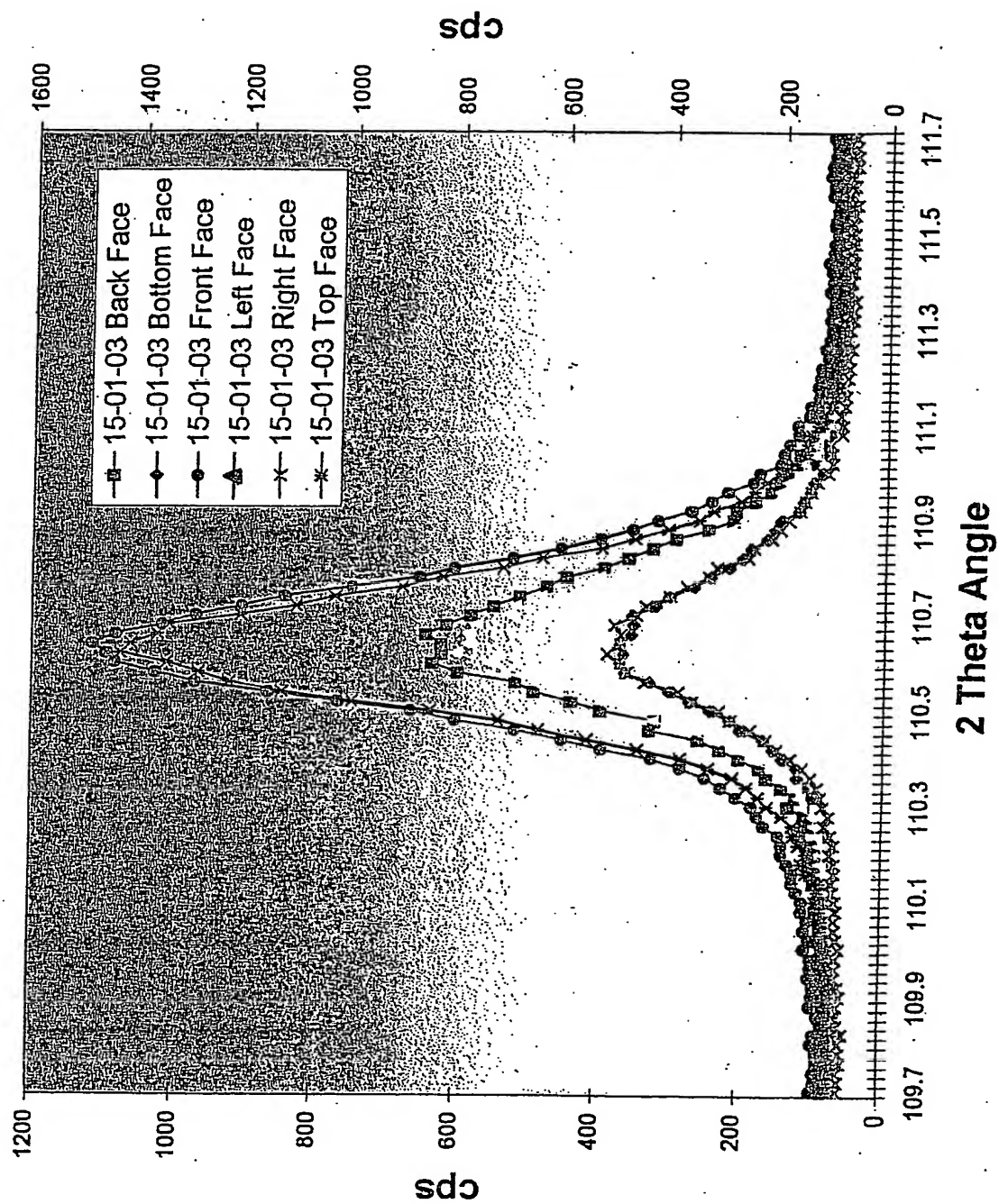


FIG. 56

15-01-04 Ta- Axial and Radial vs Ta Cal Standard

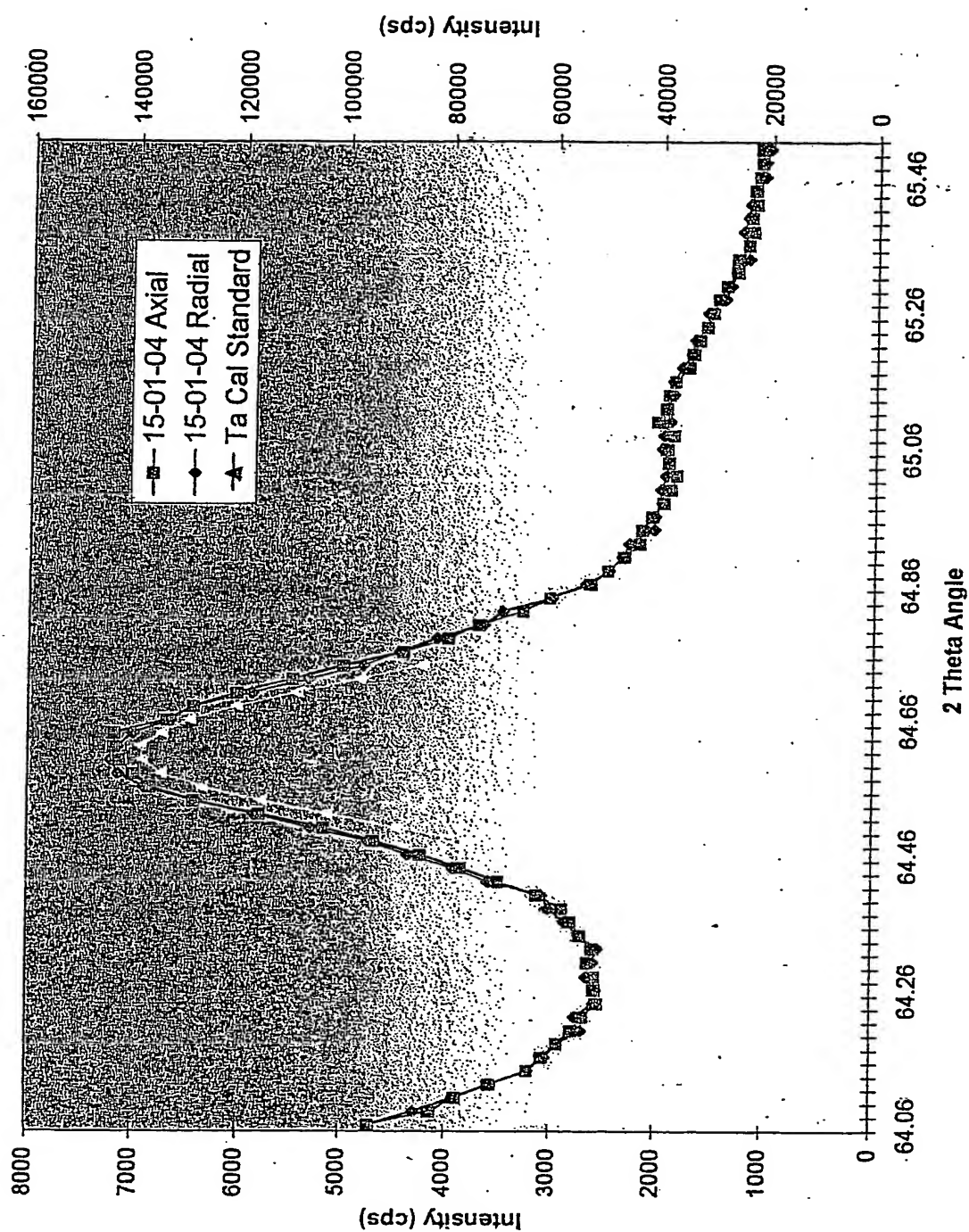


FIG. 57

15-01-04 W- Axial and Radial Samples vs W Cal Standard

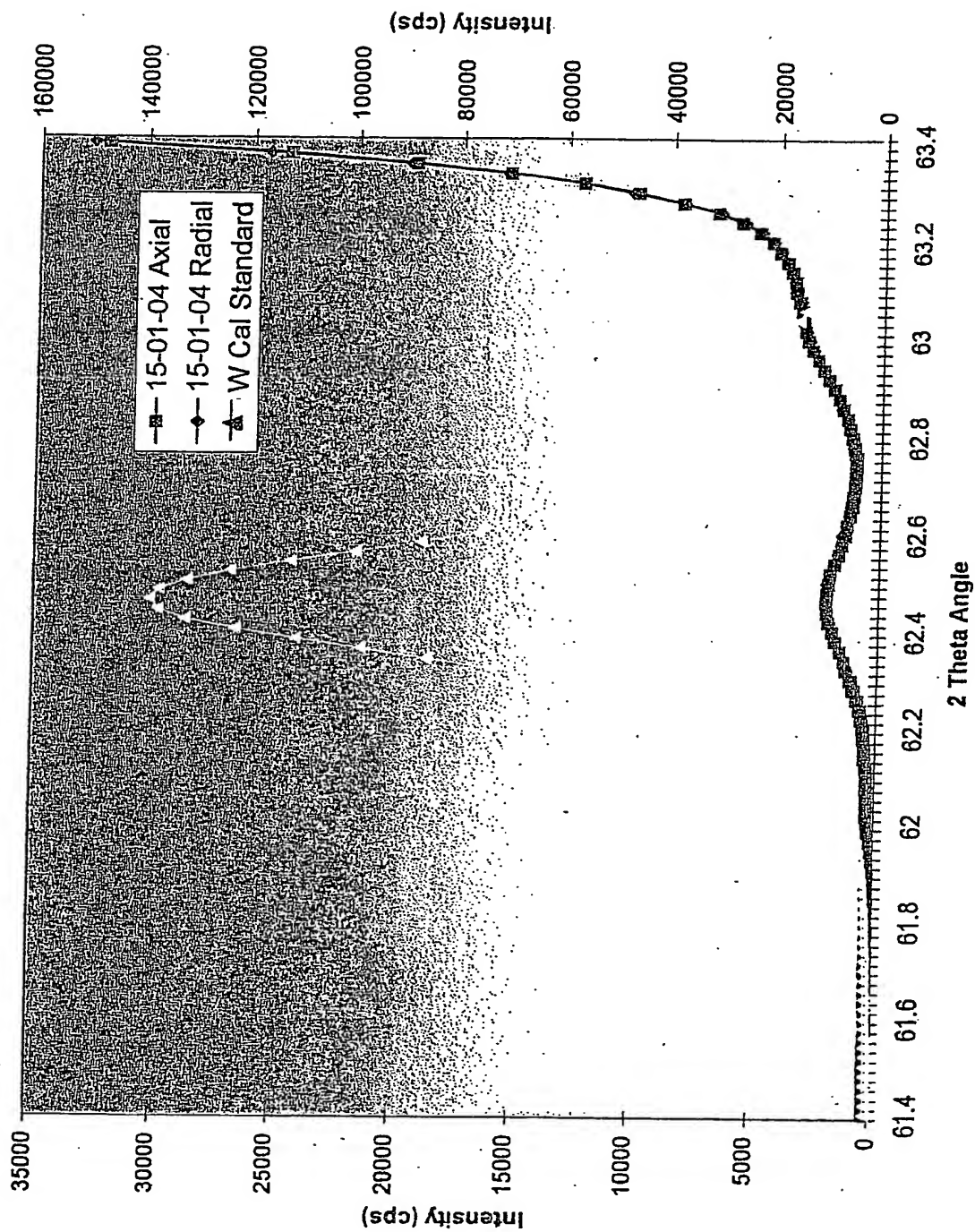


FIG. 58

15-01-04 Hf- Axial and Radial Samples vs Hf Cal Standard (LiF420/SC)

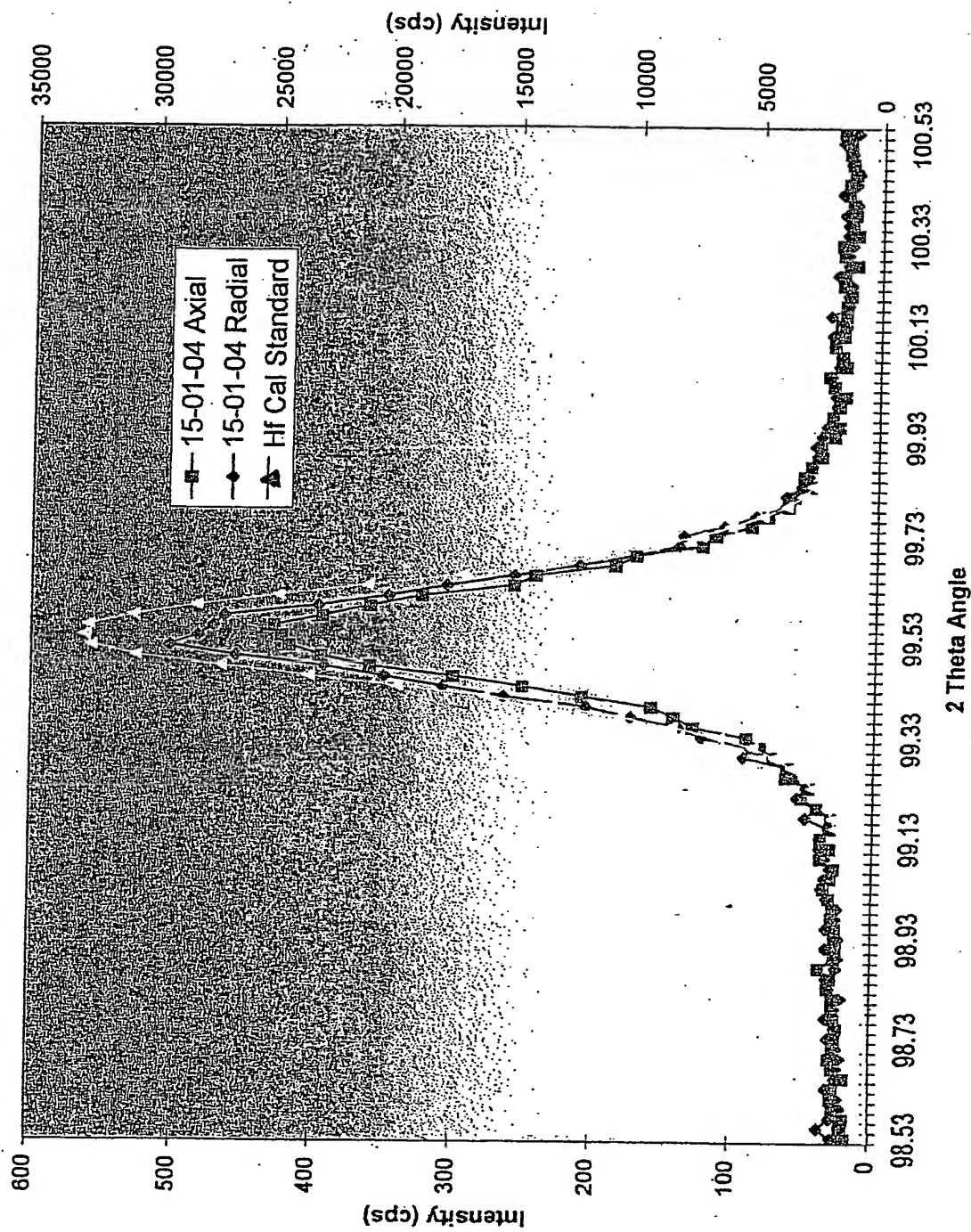


FIG. 59

XRF Scans for Sulfur (Ge111/FPC) 15-01-04 Ni/Hf/W/Ta Ingot

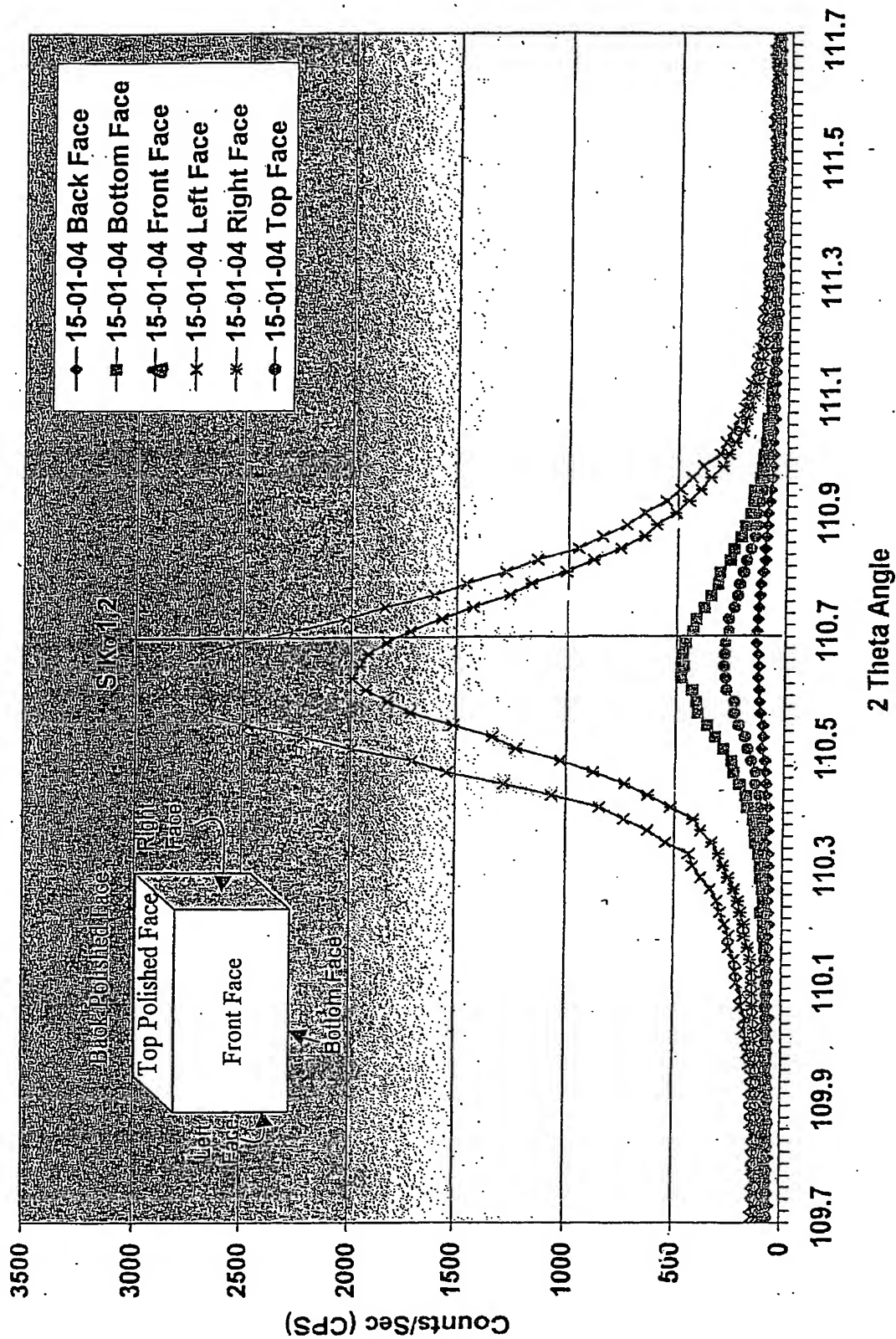


FIG. 60

15-01-04 Ni- Axial and Radial vs Ni Cal Standard (LiF220/FPC)

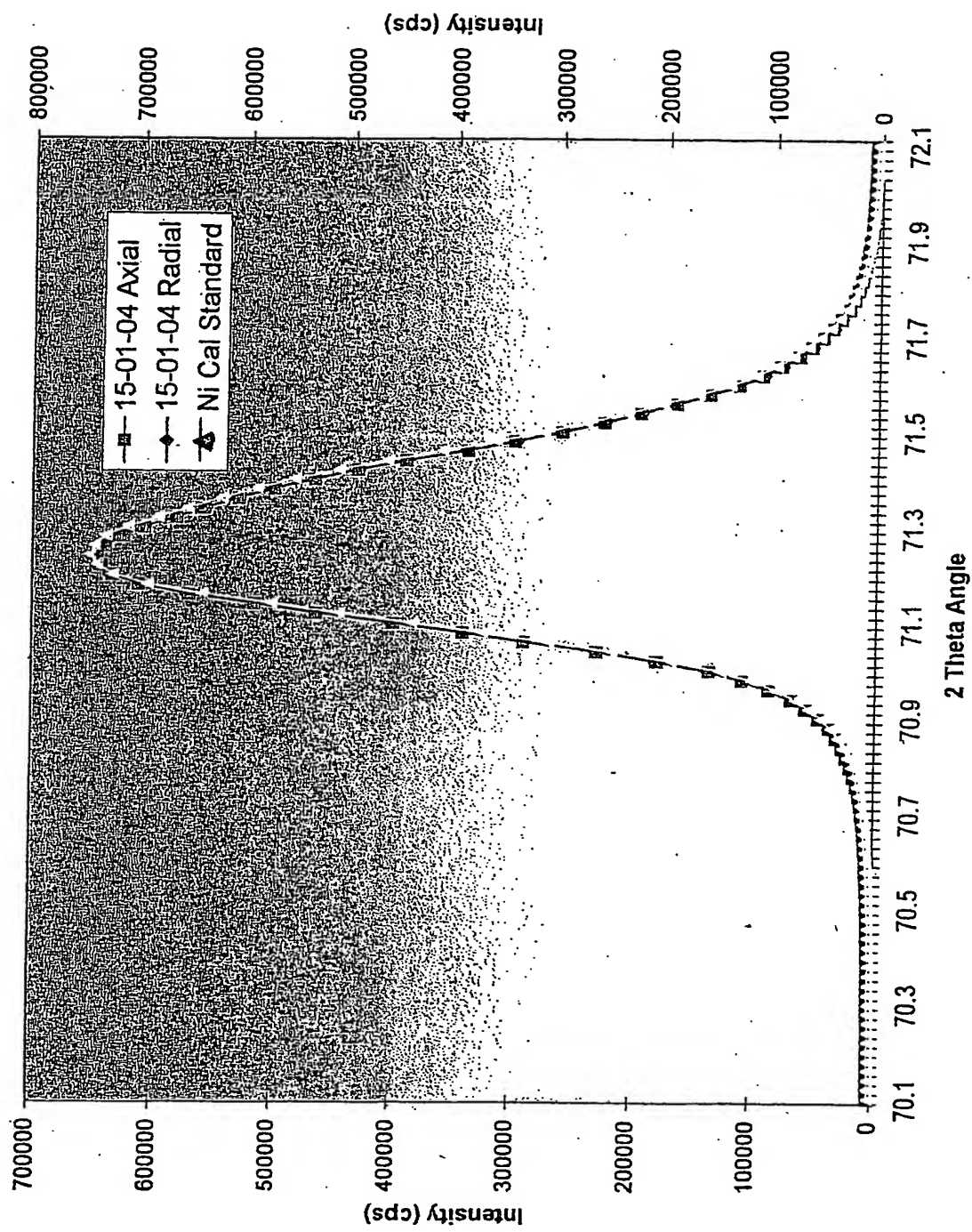
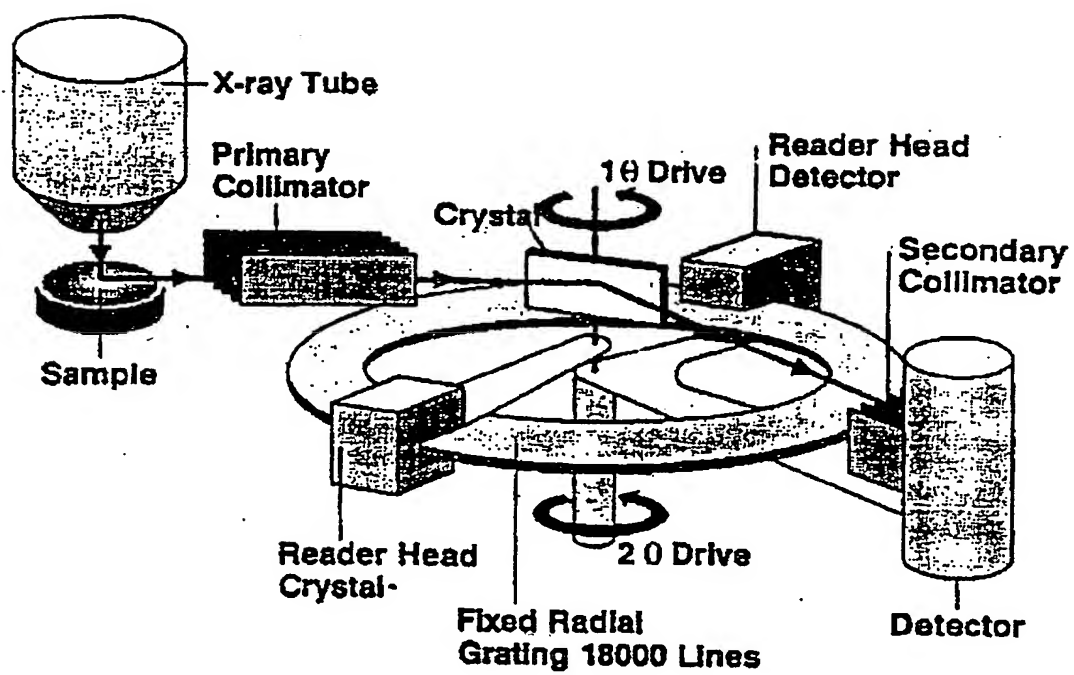


FIG. 61



Schematic layout of ARL 8410 sequential XRF.

FIG. 62